Department of Defense
Fiscal Year (FY) 2012 Budget Estimates

February 2011

Office of Secretary Of Defense

Justification Book Volume 3

Research, Development, Test & Evaluation, Defense-Wide

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Table of Volumes

Volume 3 Table of Contents

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Defense-Wide
FY 2012 President's Budget
Exhibit R-1 FY 2012 President's Budget
Total Obligational Authority
(Dollars in Thousands)

08 Feb 2011

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2010 (Base & OCO)	FY 2011 Base Request with CR Adj*	FY 2011 OCO Request with CR Adj*	FY 2011 Total Request with CR Adj*	FY 2011 Annualized CR Base**	FY 2011 Annualized CR OCO**	FY 2011 Annualized CR Total**	Sec
3	0601110D8Z	Basic Research Initiatives	01								U
4	0601111D8Z	Government/Industry Cosponsorship of University Research	01	3,961							U
6	0601120D8Z	National Defense Education Program	01	75,323	109,911		109,911	109,717		109,717	U
		Basic Research		79,284	109,911		109,911	109,717		109,717	
8	0602000D8Z	Joint Munitions Technology	02	18,109	22,448		22,448	22,408		22,408	U
10	0602228D8Z	Historically Black Colleges and Universities (HBCU) Science	02	62,696	15,067		15,067	15,040		15,040	U
11	0602234D8Z	Lincoln Laboratory Research Program	02	31,913	32,830		32,830	32,772		32,772	U
12	0602250D8Z	Systems 2020 Applied Research	02								U
18	0602663D8Z	Data to Decisions Applied Research	02		3,261		3,261	3,255		3,255	U
19	0602668D8Z	Cyber Security Research	02		10,000		10,000	9,982		9,982	U
20	0602670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Applied Research	02	7,639	9,499		9,499	9,482		9,482	U
		Applied Research		120,357	93,105		93,105	92,939		92,939	
27	0603000D8Z	Joint Munitions Advanced Technology	03	13,427	20,556		20,556	20,520		20,520	U
28	0603121D8Z	SO/LIC Advanced Development	03	43,008	44,423		44,423	44,345		44,345	U
29	0603122D8Z	Combating Terrorism Technology Support	03	124,901	85,299		85,299	85,148		85,148	U
32	0603200D8Z	Joint Advanced Concepts	03	3,154	6,808		6,808	6,796		6,796	U
33	0603225D8Z	Joint DoD-DoE Munitions Technology Development	03	21,462	22,700		22,700	22,660		22,660	U

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3	0601110D8Z	Basic Research Initiatives	01	14,731		14,731	U
4	0601111D8Z	Government/Industry Cosponsorship of University Research	01				U
6	0601120D8Z	National Defense Education Program	01	101,591		101,591	U
		Basic Research		116,322		116,322	
8	0602000D8Z	Joint Munitions Technology	02	21,592		21,592	U
10	0602228D8Z	Historically Black Colleges and Universities (HBCU) Science	02				U
11	0602234D8Z	Lincoln Laboratory Research Program	02	37,916		37,916	U
12	0602250D8Z	Systems 2020 Applied Research	02	4,381		4,381	U
18	0602663D8Z	Data to Decisions Applied Research	02	9,235		9,235	U
19	0602668D8Z	Cyber Security Research	02	9,735		9,735	U
20	0602670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Applied Research	02	14,923		14,923	U
		Applied Research		97,782		97,782	
27	0603000D8Z	Joint Munitions Advanced Technology	03	24,771		24,771	U
28	0603121D8Z	SO/LIC Advanced Development	03	45,028		45,028	U
29	0603122D8Z	Combating Terrorism Technology Support	03	77,019		77,019	U
32	0603200D8Z	Joint Advanced Concepts	03	7,903		7,903	U
33	0603225D8Z	Joint DoD-DoE Munitions Technology Development	03	20,372		20,372	U

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34	0603250D8Z	Systems 2020 Advanced Technology Development	03								U
40	0603618D8Z	Joint Electronic Advanced Technology	03	25,576	8,386		8,386	8,371		8,371	U
41	0603648D8Z	Joint Capability Technology Demonstrations	03	159,264	206,917		206,917	206,551		206,551	U
42	0603662D8Z	Networked Communications Capabilities	03	27,323	30,035		30,035	29,982		29,982	U
43	0603663D8Z	Data to Decisions Advanced Technology Development	03	4,797	6,289		6,289	6,278		6,278	U
44	0603665D8Z	Biometrics Science and Technology	03	15,967	11,416		11,416	11,396		11,396	U
45	0603668D8Z	Cyber Security Advanced Research	03		10,000		10,000	9,982		9,982	U
46	0603670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Advanced Development	03	9,761	11,510		11,510	11,490		11,490	U
47	0603680D8Z	Defense-Wide Manufacturing Science and Technology Program	03	20,992	18,916		18,916	18,883		18,883	U
48	0603699D8Z	Emerging Capabilities Technology Development	03								U
49	0603711D8Z	Joint Robotics Program/Autonomous Systems	03	10,289	9,943		9,943	9,925		9,925	U
52	0603716D8Z	Strategic Environmental Research Program	03	62,251	68,021		68,021	67,901		67,901	U
54	0603727D8Z	Joint Warfighting Program	03	10,738	10,966		10,966	10,947		10,947	U
56	0603745D8Z	Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)	03	4,676							U

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34	0603250D8Z	Systems 2020 Advanced Technology Development	03	4,381		4,381	U
40	0603618D8Z	Joint Electronic Advanced Technology	03	7,287		7,287	U
41	0603648D8Z	Joint Capability Technology Demonstrations	03	187,707		187,707	U
42	0603662D8Z	Networked Communications Capabilities	03	23,890		23,890	U
43	0603663D8Z	Data to Decisions Advanced Technology Development	03	9,235		9,235	U
44	0603665D8Z	Biometrics Science and Technology	03	10,762		10,762	U
45	0603668D8Z	Cyber Security Advanced Research	03	10,709		10,709	U
46	0603670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Advanced Development	03	18,179		18,179	U
47	0603680D8Z	Defense-Wide Manufacturing Science and Technology Program	03	17,888		17,888	U
48	0603699D8Z	Emerging Capabilities Technology Development	03	26,972		26,972	U
49	0603711D8Z	Joint Robotics Program/Autonomous Systems	03	9,756		9,756	U
52	0603716D8Z	Strategic Environmental Research Program	03	66,409		66,409	U
54	0603727D8Z	Joint Warfighting Program	03	10,547		10,547	U
56	0603745D8Z	Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)	03				U

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57	0603755D8Z	High Performance Computing Modernization Program	03	231,735	200,986		200,986	200,631		200,631	U
64	0603781D8Z	Software Engineering Institute	03	28,319	30,910		30,910	30,855		30,855	U
65	0603826D8Z	Quick Reaction Special Projects	03	88,163	78,244		78,244	78,106		78,106	U
66	0603828D8Z	Joint Experimentation	03	105,656	111,946		111,946	111,748		111,748	U
67	0603832D8Z	DoD Modeling and Simulation Management Office	03	34,055	38,140		38,140	38,073		38,073	U
70	0603941D8Z	Test & Evaluation Science & Technology	03	93,303	97,642		97,642	97,469		97,469	U
71	0603942D8Z	Technology Transfer	03	13,351	23,310		23,310	23,269		23,269	U
72	0604055D8Z	Operational Energy Capability Improvement	03								U
73	0303310D8Z	CWMD Systems	03								U
		Advanced Technology Development (ATD)		1,152,168	1,153,363		1,153,363	1,151,326		1,151,326	
77	0603161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	04	45,036	32,132		32,132	32,075		32,075	U
78	0603527D8Z	RETRACT LARCH	04	20,469	21,592		21,592	21,554		21,554	U
79	0603600D8Z	WALKOFF	04								U
80	0603709D8Z	Joint Robotics Program	04	14,568	9,878		9,878	9,861		9,861	U
81	0603714D8Z	Advanced Sensor Applications Program	04	17,600	18,060		18,060	18,028		18,028	U
82	0603851D8Z	Environmental Security Technical Certification Program	04	40,998	30,419		30,419	30,365		30,365	U

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57	0603755D8Z	High Performance Computing Modernization Program	03				U
64	0603781D8Z	Software Engineering Institute	03	30,424		30,424	U
65	0603826D8Z	Quick Reaction Special Projects	03	89,925		89,925	U
66	0603828D8Z	Joint Experimentation	03	58,130		58,130	U
67	0603832D8Z	DoD Modeling and Simulation Management Office	03	37,029		37,029	U
70	0603941D8Z	Test & Evaluation Science & Technology	03	99,593		99,593	U
71	0603942D8Z	Technology Transfer	03				U
72	0604055D8Z	Operational Energy Capability Improvement	03	20,444		20,444	U
73	0303310D8Z	CWMD Systems	03	7,788		7,788	U
		Advanced Technology Development (ATD)		922,148		922,148	
77	0603161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	04	36,798		36,798	U
78	0603527D8Z	RETRACT LARCH	04	21,040		21,040	U
79	0603600D8Z	WALKOFF	04	112,142		112,142	U
80	0603709D8Z	Joint Robotics Program	04	11,129		11,129	U
81	0603714D8Z	Advanced Sensor Applications Program	04	18,408		18,408	U
82	0603851D8Z	Environmental Security Technical Certification Program	04	63,606		63,606	U

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102	0603920D8Z	Humanitarian Demining	04	14,362	14,735		14,735	14,709		14,709	U
103	0603923D8Z	Coalition Warfare	04	13,094	13,786		13,786	13,762		13,762	U
104	0604016D8Z	Department of Defense Corrosion Program	04	21,895	4,802		4,802	4,794		4,794	U
105	0604400D8Z	Department of Defense (DoD) Unmanned Aircraft System (UAS) Common Development	04	59,463	49,292		49,292	49,205		49,205	U
106	0604648D8Z	Joint Capability Technology Demonstrations	04	10,715							U
107	0604670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Research and Engineering	04	6,295	7,459		7,459	7,446		7,446	U
108	0604787D8Z	Joint Systems Integration Command (JSIC)	04	17,941	19,413		19,413	19,379		19,379	U
109	0604828D8Z	Joint FIRES Integration and Interoperability Team	04	15,511	16,637		16,637	16,608		16,608	U
114	0605017D8Z	Reduction Of Total Ownership Cost	04	22,870	20,310		20,310	20,274		20,274	U
115	0303191D8Z	Joint Electromagnetic Technology (JET) Program	04	6,290	4,027		4,027	4,020		4,020	U
		Advanced Component Development & Prototypes		327,107	262,542		262,542	262,080		262,080	
116	0604051D8Z	Defense Acquisition Challenge Program (DACP)	05	36,293	24,344		24,344	24,301		24,301	U
117	0604161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E SDD	05	7,421	7,973		7,973	7,959		7,959	U

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102	0603920D8Z	Humanitarian Demining	04	14,996		14,996	U
103	0603923D8Z	Coalition Warfare	04	12,743		12,743	U
104	0604016D8Z	Department of Defense Corrosion Program	04	3,221		3,221	U
105	0604400D8Z	Department of Defense (DoD) Unmanned Aircraft System (UAS) Common Development	04	25,120		25,120	U
106	0604648D8Z	Joint Capability Technology Demonstrations	04				U
107	0604670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Research and Engineering	04	10,309		10,309	U
108	0604787D8Z	Joint Systems Integration Command (JSIC)	04	13,024		13,024	U
109	0604828D8Z	Joint FIRES Integration and Interoperability Team	04	9,290		9,290	U
114	0605017D8Z	Reduction Of Total Ownership Cost	04				U
115	0303191D8Z	Joint Electromagnetic Technology (JET) Program	04	3,358		3,358	U
		Advanced Component Development & Prototypes		355,184		355,184	
116	0604051D8Z	Defense Acquisition Challenge Program (DACP)	05				U
117	0604161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E SDD	05	7,220		7,220	U

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118	0604165D8Z	Prompt Global Strike Capability Development	05	159,416	239,861		239,861	239,437		239,437	U
120	0604709D8Z	Joint Robotics Program	05	4,720	4,155		4,155	4,148		4,148	U
122	0604771D8Z	Joint Tactical Information Distribution System (JTIDS)	05	19,856	20,954		20,954	20,917		20,917	U
128	0605022D8Z	Defense Exportability Program	05								U
129	0605027D8Z	OUSD(C) IT Development Initiatives	05	6,764	5,000		5,000	4,991		4,991	U
131	0605075D8Z	DCMO Policy and Integration	05								U
132	0605140D8Z	Trusted Foundry	05	53,014	35,512		35,512	35,449		35,449	U
133	0605210D8Z	Defense-Wide Electronic Procurement Capabilities	05								U
134	0605648D8Z	Defense Acquisition Executive (DAE) Pilot Program	05	4,128							U
136	0807708D8Z	Wounded Ill and Injured Senior Oversight Committee (WII-SOC) Staff Office	05	1,548	1,590		1,590	1,587		1,587	U
		System Development and Demonstration (SDD)		293,160	339,389		339,389	338,789		338,789	
137	0604774D8Z	Defense Readiness Reporting System (DRRS)	06	14,838	5,113		5,113	5,104		5,104	U
138	0604875D8Z	Joint Systems Architecture Development	06	12,089	8,052		8,052	8,038		8,038	U
139	0604940D8Z	Central Test and Evaluation Investment Development (CTEIP)	06	160,351	162,286		162,286	161,999		161,999	U
140	0604942D8Z	Assessments and Evaluations	06		2,500		2,500	2,496		2,496	U

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118	0604165D8Z	Prompt Global Strike Capability Development	05	204,824		204,824	U
120	0604709D8Z	Joint Robotics Program	05	2,782		2,782	U
122	0604771D8Z	Joint Tactical Information Distribution System (JTIDS)	05	17,395		17,395	U
128	0605022D8Z	Defense Exportability Program	05	1,929		1,929	U
129	0605027D8Z	OUSD(C) IT Development Initiatives	05	4,993		4,993	U
131	0605075D8Z	DCMO Policy and Integration	05	41,808		41,808	U
132	0605140D8Z	Trusted Foundry	05				U
133	0605210D8Z	Defense-Wide Electronic Procurement Capabilities	05	14,950		14,950	U
134	0605648D8Z	Defense Acquisition Executive (DAE) Pilot Program	05				U
136	0807708D8Z	Wounded Ill and Injured Senior Oversight Committee (WII-SOC) Staff Office	05				U
		System Development and Demonstration (SDD)		295,901		295,901	
137	0604774D8Z	Defense Readiness Reporting System (DRRS)	06	6,658		6,658	U
138	0604875D8Z	Joint Systems Architecture Development	06	4,731		4,731	U
139	0604940D8Z	Central Test and Evaluation Investment Development (CTEIP)	06	140,231		140,231	U
140	0604942D8Z	Assessments and Evaluations	06	2,757		2,757	U

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141	0604943D8Z	Thermal Vicar	06	8,768	8,851		8,851	8,835		8,835	U
142	0605100D8Z	Joint Mission Environment Test Capability (JMETC)	06	9,203	10,287		10,287	10,269		10,269	U
143	0605104D8Z	Technical Studies, Support and Analysis	06	44,705	49,282		49,282	49,195		49,195	U
144	0605110D8Z	USD(A&T)--Critical Technology Support	06	4,719	4,743		4,743	4,735		4,735	U
145	0605117D8Z	Foreign Material Acquisition and Exploitation	06	93,969	95,520		95,520	95,351		95,351	U
147	0605128D8Z	Classified Program USD(P)	06	92,066							U
148	0605130D8Z	Foreign Comparative Testing	06	33,155	32,755		32,755	32,697		32,697	U
149	0605142D8Z	Systems Engineering	06		29,824		29,824	29,771		29,771	U
150	0605161D8Z	Nuclear Matters-Physical Security	06	5,564	6,264		6,264	6,253		6,253	U
151	0605170D8Z	Support to Networks and Information Integration	06	14,363	15,091		15,091	15,064		15,064	U
152	0605200D8Z	General Support to USD (Intelligence)	06	11,031	6,227		6,227	6,216		6,216	U
157	0605502D8Z	Small Business Innovative Research	06	56,443							U
160	0605790D8Z	Small Business Innovation Research (SBIR)/ Small Business Technology Transfer (S	06	2,056	2,189		2,189	2,185		2,185	U
161	0605798D8Z	Defense Technology Analysis	06	12,108	13,858		13,858	13,834		13,834	U
162	0605799D8Z	Emerging Capabilities	06	34,821	19,701		19,701	19,666		19,666	U

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(Dollars in Thousands)

08 Feb 2011

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Sec
141	0604943D8Z	Thermal Vicar	06	7,827		7,827	U
142	0605100D8Z	Joint Mission Environment Test Capability (JMETC)	06	10,479		10,479	U
143	0605104D8Z	Technical Studies, Support and Analysis	06	34,213		34,213	U
144	0605110D8Z	USD(A&T)--Critical Technology Support	06	1,486		1,486	U
145	0605117D8Z	Foreign Material Acquisition and Exploitation	06	64,524		64,524	U
147	0605128D8Z	Classified Program USD(P)	06				U
148	0605130D8Z	Foreign Comparative Testing	06	19,080		19,080	U
149	0605142D8Z	Systems Engineering	06	41,884		41,884	U
150	0605161D8Z	Nuclear Matters-Physical Security	06	4,261		4,261	U
151	0605170D8Z	Support to Networks and Information Integration	06	9,437		9,437	U
152	0605200D8Z	General Support to USD (Intelligence)	06	6,549	9,200	15,749	U
157	0605502D8Z	Small Business Innovative Research	06				U
160	0605790D8Z	Small Business Innovation Research (SBIR)/ Small Business Technology Transfer (S	06	1,924		1,924	U
161	0605798D8Z	Defense Technology Analysis	06	16,135		16,135	U
162	0605799D8Z	Emerging Capabilities	06				U

R-1P: FY 2012 President's Budget (Published Official Position With FY 2011 CR Adjustments), as of February 8, 2011 at 12:49:45

Defense-Wide
FY 2012 President's Budget
Exhibit R-1 FY 2012 President's Budget
Total Obligational Authority
(Dollars in Thousands)

08 Feb 2011

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2010 (Base & OCO)	FY 2011 Base Request with CR Adj*	FY 2011 OCO Request with CR Adj*	FY 2011 Total Request with CR Adj*	FY 2011 Annualized CR Base**	FY 2011 Annualized CR OCO**	FY 2011 Annualized CR Total**	Sec
165	0605804D8Z	Development Test and Evaluation	06	33,115	18,688		18,688	18,655		18,655	U
168	0606100D8Z	Budget and Program Assessments	06	5,705	6,099		6,099	6,088		6,088	U
169	0606301D8Z	Aviation Safety Technologies	06	7,699	10,900		10,900	10,881		10,881	U
170	0203345D8Z	Operations Security (OPSEC)	06								U
174	0303166D8Z	Support to Information Operations (IO) Capabilities	06	29,488	31,500		31,500	31,444		31,444	U
175	0303169D8Z	Information Technology Rapid Acquisition	06	4,507	5,135		5,135	5,126		5,126	U
177	0305193D8Z	Intelligence Support to Information Operations (IO)	06	20,450	21,272		21,272	21,234		21,234	U
179	0305400D8Z	Warfighting and Intelligence-Related Support	06	822	845		845	844		844	U
180	0804767D8Z	COCOM Exercise Engagement and Training Transformation (CE2T2)	06	39,364	92,253		92,253	92,090		92,090	U
184	0909999D8Z	Financing for Cancelled Account Adjustments	06	814							U
	RDT&E	Management Support		752,213	659,235		659,235	658,070		658,070	
189	0607828D8Z	Joint Integration and Interoperability	07	52,667	44,139		44,139	44,061		44,061	U
206	0303140D8Z	Information Systems Security Program	07	12,975	14,077		14,077	14,052		14,052	U
214	0303260D8Z	Joint Military Deception Initiative	07	925	1,161		1,161	1,159		1,159	U
220	0305103D8Z	Cyber Security Initiative	07	984	501		501	500		500	U

R-1P: FY 2012 President's Budget (Published Official Position With FY 2011 CR Adjustments), as of February 8, 2011 at 12:49:45
* Reflects the FY 2011 President's Budget with an undistributed adjustment to match the Annualized Continuing Resolution funding level by appropriation.
** Adjusts each budget line included in the FY 2011 President's Budget request proportionally to match the Annualized Continuing Resolution funding level for each appropriation.

Defense-Wide
FY 2012 President's Budget
Exhibit R-1 FY 2012 President's Budget
Total Obligational Authority
(Dollars in Thousands)

08 Feb 2011

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Sec
165	0605804D8Z	Development Test and Evaluation	06	15,805		15,805	U
168	0606100D8Z	Budget and Program Assessments	06	4,528		4,528	U
169	0606301D8Z	Aviation Safety Technologies	06	6,925		6,925	U
170	0203345D8Z	Operations Security (OPSEC)	06	1,777		1,777	U
174	0303166D8Z	Support to Information Operations (IO) Capabilities	06	12,209		12,209	U
175	0303169D8Z	Information Technology Rapid Acquisition	06	4,288		4,288	U
177	0305193D8Z	Intelligence Support to Information Operations (IO)	06	15,002		15,002	U
179	0305400D8Z	Warfighting and Intelligence-Related Support	06	861		861	U
180	0804767D8Z	COCOM Exercise Engagement and Training Transformation (CE2T2)	06	59,958		59,958	U
184	0909999D8Z	Financing for Cancelled Account Adjustments	06				U
	RDT&E	Management Support		493,529	9,200	502,729	
189	0607828D8Z	Joint Integration and Interoperability	07	29,880		29,880	U
206	0303140D8Z	Information Systems Security Program	07	11,753		11,753	U
214	0303260D8Z	Joint Military Deception Initiative	07	1,241		1,241	U
220	0305103D8Z	Cyber Security Initiative	07	411		411	U

R-1P: FY 2012 President's Budget (Published Official Position With FY 2011 CR Adjustments), as of February 8, 2011 at 12:49:45

Defense-Wide
FY 2012 President's Budget
Exhibit R-1 FY 2012 President's Budget
Total Obligational Authority
(Dollars in Thousands)

08 Feb 2011

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2010 (Base & OCO)	FY 2011 Base Request with CR Adj*	FY 2011 OCO Request with CR Adj*	FY 2011 Total Request with CR Adj*	FY 2011 Annualized CR Base**	FY 2011 Annualized CR OCO**	FY 2011 Annualized CR Total**	Sec
223	0305125D8Z	Critical Infrastructure Protection (CIP)	07	16,449	10,486		10,486	10,467		10,467	U
227	0305186D8Z	Policy R&D Programs	07	6,813	9,136		9,136	9,120		9,120	U
229	0305199D8Z	Net Centricity	07	1,425	29,831		29,831	29,778		29,778	U
239	0305387D8Z	Homeland Defense Technology Transfer Program	07	2,921	2,988		2,988	2,983		2,983	U
240	0305600D8Z	International Intelligence Technology and Architectures	07	1,376	1,416		1,416	1,413		1,413	U
251	1001018D8Z	NATO AGS	07	66,057	93,885		93,885	93,719		93,719	U
		Operational Systems Development		162,592	207,620		207,620	207,252		207,252	
Total Research, Development, Test & Eval, DW				2,886,881	2,825,165		2,825,165	2,820,173		2,820,173	

R-1P: FY 2012 President's Budget (Published Official Position With FY 2011 CR Adjustments), as of February 8, 2011 at 12:49:45
* Reflects the FY 2011 President's Budget with an undistributed adjustment to match the Annualized Continuing Resolution funding level by appropriation.
** Adjusts each budget line included in the FY 2011 President's Budget request proportionally to match the Annualized Continuing Resolution funding level for each appropriation.

Defense-Wide
FY 2012 President's Budget
Exhibit R-1 FY 2012 President's Budget
Total Obligational Authority
(Dollars in Thousands)

08 Feb 2011

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Sec
223	0305125D8Z	Critical Infrastructure Protection (CIP)	07	13,008		13,008	U
227	0305186D8Z	Policy R&D Programs	07	6,603		6,603	U
229	0305199D8Z	Net Centricity	07	14,926		14,926	U
239	0305387D8Z	Homeland Defense Technology Transfer Program	07	2,660		2,660	U
240	0305600D8Z	International Intelligence Technology and Architectures	07	1,444		1,444	U
251	1001018D8Z	NATO AGS	07				U
		Operational Systems Development		81,926		81,926	
Total Research, Development, Test & Eval, DW				2,362,792	9,200	2,371,992	

R-1P: FY 2012 President's Budget (Published Official Position With FY 2011 CR Adjustments), as of February 8, 2011 at 12:49:45

Program Element Table of Contents (by Budget Activity then Line Item Number)

Budget Activity 01: Basic Research
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Budget Activity 02: Applied Research
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Budget Activity 02: Applied Research
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Budget Activity 03: Advanced Technology Development (ATD)
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Budget Activity 03: Advanced Technology Development (ATD)
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Budget Activity 05: Development & Demonstration (SDD)
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Budget Activity 06: RDT&E Management Support
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Budget Activity 06: RDT&E Management Support
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Budget Activity 07: Operational Systems Development
Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601110D8Z: *Basic Research Initiatives*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	-	14.731	-	14.731	20.115	22.126	24.160	24.587	Continuing	Continuing
P010: *Basic Research Initiatives*	-	-	14.731	-	14.731	20.115	22.126	24.160	24.587	Continuing	Continuing

Note

The Basic Research Initiatives PE reflects the transfer of the Minerva Research Intiative from the Army in FY 2012.

A. Mission Description and Budget Item Justification

The Basic Research Initiatives program funds DoD-wide research projects that directly support Director, Defense Research and Engineering (DDR&E) imperatives. Work will be performed by teams of research groups in industry, universities, and federal laboratories.

The primary objective of this program is to support the Minerva Research Intiative (MRI), a university-based social science research program initiated by the Secretary of Defense in FY 2009 to develop a fundamental understanding of the perceptions, attitudes, and beliefs of foreign cultures. The overall goals of the initiative are to foster basic social science research on topics of U.S. national strategic importance; to increase the Department's intellectual capital in the social sciences; and to build bridges between the Department and the academic social science community.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	14.731	-	14.731
Total Adjustments	-	-	14.731	-	14.731
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Transferred from Army in FY 2012	-	-	16.400	-	16.400
• Economic Assumptions	-	-	-0.023	-	-0.023
• Efficiencies Reductions - Report, Studies, Boards and Commission	-	-	-1.412	-	-1.412
• Efficiencies Reductions - Service Support Contracts	-	-	-0.234	-	-0.234

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601110D8Z: *Basic Research Initiatives*

Change Summary Explanation

The Basic Research Initiatives PE reflects the transfer of the Minerva Research Intiative from the Army in FY 2012.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction for the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601110D8Z: *Basic Research Initiatives*	PROJECT P010: *Basic Research Initiatives*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P010: *Basic Research Initiatives*	-	-	14.731	-	14.731	20.115	22.126	24.160	24.587	Continuing	Continuing

Note

The Basic Research Initiatives PE reflects the transfer of the Minerva Research Intiative from the Army in FY 2012.

A. Mission Description and Budget Item Justification

The Basic Research Initiatives program funds DoD-wide research projects that directly support Director, Defense Research and Engineering (DDR&E) imperatives. Work will be performed by teams of research groups in industry, universities, and federal laboratories.

The primary objective of this program is to support the Minerva Research Intiative (MRI), a university-based social science research program initiated by the Secretary of Defense in FY 2009 to develop a fundamental understanding of the perceptions, attitudes, and beliefs of foreign cultures. The overall goals of the initiative are to foster basic social science research on topics of U.S. national strategic importance; to increase the Department's intellectual capital in the social sciences; and to build bridges between the Department and the academic social science community.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Minerva Research Initiative	-	-	14.731
FY 2012 Plans: Studies and new approaches to understanding dimensions of national security, conflict and cooperation will pursued in FY 2012. The work is consistent with the Director, Defense Research and Engineering Strategic Basic Research Plan.			
Accomplishments/Planned Programs Subtotals	-	-	14.731

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601111D8Z: *Government/Industry Co-sponsorship of University Research*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	3.961	-	-	-	-	-	-	-	-	Continuing	Continuing
P111: *Government/Industry Co-sponsorship of University Research*	3.961	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

The Department of Defense requested no funding for the Government/Industry Co-sponsorship of University Research (GICUR) in FY 2010 and outyears.

A. Mission Description and Budget Item Justification

The GICUR program was established as a mechanism to co-fund university research with industry. The Department has not requested funding since FY 2004. The GICUR program has since executed Congressional earmarks.

In FY 2010, the GICUR program received three Congressional Adds. They are:

- Integrated Cryo-cooled High Power Density Systems $3.200 (Sponsor Sen Martinez (FL)
- High Efficiency Solar Energy Generation and Storage $0.800 (Sponsor Rep Jackson-Lee (TX)
- Center for Research on Minority Health Prostate Cancer Outreach Project $0.800 (Sponsor Rep Jackson-Lee (TX)

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	4.761	-	-	-	-
Current President's Budget	3.961	-	-	-	-
Total Adjustments	-0.800	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.800	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P111: *Government/Industry Co-sponsorship of University Research*		
Congressional Add: *Integrated Cryo-cooled High Power Density Systems*	3.175	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	**R-1 ITEM NOMENCLATURE** PE 0601111D8Z: *Government/Industry Co-sponsorship of University Research*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Congressional Add: *High Efficiency Solar Energy Generation and Storage*	0.786	-
Congressional Add Subtotals for Project: P111	3.961	-
Congressional Add Totals for all Projects	3.961	-

Change Summary Explanation

The Congressional Add for the Center for Research on Minority Health Prostate Cancer Outreach Project $0.800 (Sponsor Rep Jackson-Lee (TX) was reprogrammed to the Army Medical Command / Defense Health Program PE 0603115 Medical Technology Development for proper execution.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601111D8Z: *Government/Industry Co-sponsorship of University Research*	PROJECT P111: *Government/Industry Co-sponsorship of University Research*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P111: *Government/Industry Co-sponsorship of University Research*	3.961	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Government/Industry Co-sponsorship of University Research (GICUR) program was established as a mechanism to co-fund university research with industry. The Department of Defense has not requested funding since FY 2004. The GICUR program has since executed Congressional earmarks.

In FY 2010, the GICUR program received three Congressional Adds. They are:

- Integrated Cryo-cooled High Power Density Systems $3.200 (Sponsor Sen Martinez (FL))
- High Efficiency Solar Energy Generation and Storage $0.800 (Sponsor Rep Jackson-Lee (TX))
- Center for Research on Minority Health Prostate Cancer Outreach Project $0.800 (Sponsor Rep Jackson-Lee (TX))

The Congressional Add for the Center for Research on Minority Health Prostate Cancer Outreach Project $0.800 was reprogrammed to the Army Medical Command / Defense Health Program PE 0603115 Medical Technology Development for proper execution.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011
Congressional Add: Integrated Cryo-cooled High Power Density Systems ***FY 2010 Accomplishments:*** The objective of this multi-university program is to approach the goal of achieving cryo-cooled high power densities through systems management of heat generation and removal in the electrical system. The systems approach began with identifying the enabling technologies needed and will pursue research programs to advance those technologies. Congressionally directed funding was applied to continuing research activities in several areas: (1) Systems Analysis; (2) Materials – Conductors, Semi-conductors and Insulation; (3) Materials – Conductors, Semi-conductors and Insulation; and (4) System Components, such as conductors, motors, transformers, and power electronics operating at cryogenic temperatures.	3.175	-
Congressional Add: High Efficiency Solar Energy Generation and Storage ***FY 2010 Accomplishments:*** Congressional Add has not been executed. Purpose and intended recipient has not yet been identified.	0.786	-
Congressional Adds Subtotals	3.961	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601111D8Z: *Government/Industry Co-sponsorship of University Research*	PROJECT P111: *Government/Industry Co-sponsorship of University Research*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601120D8Z: *National Defense Education Program (NDEP)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	75.323	109.911	101.591	-	101.591	93.310	83.438	86.925	87.400	Continuing	Continuing
P120: *National Defense Education Program (NDEP)*	75.323	109.911	101.591	-	101.591	93.310	83.438	86.925	87.400	Continuing	Continuing

A. Mission Description and Budget Item Justification

The purpose of the National Defense Education Program (NDEP) is to inspire, develop, and attract the current and next generations of Science, Technology, Engineering, and Mathematics (STEM) talent essential to deliver innovative solutions for DoD and the Nation's current and future challenges. NDEP is aligned with the DoD-wide STEM Education and Outreach Strategic Plan.

A major goal of NDEP is to develop a continuum of high quality STEM experiential, service-wide, engagements for K-12 students through early career world-class researchers that directly involve DoD SMEs. NDEP is designed to address current and projected national and DoD STEM talent needs, strengthen scientific and technological capabilities including current warfighting systems and military personnel needs, and enhance the quality of DoD's workforce.

NDEP consists of three components: a) K-12, b) Science, Mathematics and Research for Transformation (SMART), and c) the National Security Science and Engineering Faculty Fellowship (NSSEFF).

The K–12 component links DoD scientists and engineers with students and teachers and supports national competitions to create locally-based, content-rich environments and robust learning opportunities for students and teachers with an understanding of the real-world application of STEM skills. In 2010, 1,750 DoD scientists and engineers from more than 48 DoD laboratories in 26 states engaged more than 180,000 students and 8,000 teachers in outreach and informal education initiatives.

SMART awards highly competitive scholarships to STEM undergraduate and graduate students and moves them directly into DoD's workforce upon their graduation. Since 2006, SMART has supported more than 850 students from bachelor to Ph.D. levels, and nearly 300 have transitioned into the DoD workforce.

NSSEFF creates and develops the current and next generation of scientists and engineers for national security by supporting innovative basic science and engineering research within academia. Undergraduate through post-doctoral students at academic institutions work with world-class scientists and engineers referred to as NSSEFF Fellows. Since 2008, 29 distinguished university researchers have been awarded NSSEFF grants that have resulted in teams of more than 150 students, postdoctoral scholars and faculty.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601120D8Z: *National Defense Education Program (NDEP)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	89.980	109.911	122.947	-	122.947
Current President's Budget	75.323	109.911	101.591	-	101.591
Total Adjustments	-14.657	-	-21.356	-	-21.356
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.701	-			
• SBIR/STTR Transfer	-2.189	-			
• Other Internal Adjustments	-10.767	-	-14.788	-	-14.788
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-5.715	-	-5.715
• Defense Efficiency - Contractor Staff Support	-	-	-0.701	-	-0.701
• Economic Assumptions	-	-	-0.152	-	-0.152

Change Summary Explanation

FY 2012 Defense Efficiency. Defense Efficiency – Report, Studies, Boards and Commissions. The Department of Defense reform agenda, reflects a reduction of in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

The program also reflects a $ 0.152 M reduction for economic assumptions and a $14.789 M reduction for a realignment for other departmental priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601120D8Z: *National Defense Education Program (NDEP)*	PROJECT P120: *National Defense Education Program (NDEP)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P120: *National Defense Education Program (NDEP)*	75.323	109.911	101.591	-	101.591	93.310	83.438	86.925	87.400	Continuing	Continuing

A. Mission Description and Budget Item Justification

The purpose of National Defense Education Program (NDEP) is to inspire, develop, and attract the current and next generations of Science, Technology, Engineering, and Mathematics (STEM) talent essential to deliver innovative solutions for DoD and the Nation's current and future challenges. NDEP is aligned with the DoD-wide STEM Education and Outreach Strategic Plan.

A major goal of NDEP is to develop a continuum of high quality STEM experiential, service-wide, engagements for K-12 students through early career world-class researchers that directly involve DoD SMEs. NDEP is designed to address current and projected national and DoD STEM talent needs, strengthen scientific and technological capabilities including current warfighting systems and military personnel needs, and enhance the quality of DoD's workforce.

NDEP consists of three components: a) K-12, b) Science, Mathematics and Research for Transformation (SMART), and c) the National Security Science and Engineering Faculty Fellowship (NSSEFF).

The K–12 component links DoD scientists and engineers with students and teachers and supports national competitions to create locally-based, content-rich environments and robust learning opportunities for students and teachers with an understanding of the real-world application of STEM skills. In 2010, 1,750 DoD scientists and engineers from more than 48 DoD laboratories in 26 states engaged more than 180,000 students and 8,000 teachers in outreach and informal education initiatives.

SMART awards highly competitive scholarships to STEM undergraduate and graduate students and moves them directly into DoD's workforce upon their graduation. Since 2006, SMART has supported more than 850 students from bachelor to Ph.D. levels, and nearly 300 have transitioned into the DoD workforce.

NSSEFF creates and develops the current and next generation of scientists and engineers for national security by supporting innovative basic science and engineering research within academia. Undergraduate through post-doctoral students at academic institutions work with world-class scientists and engineers referred to as NSSEFF Fellows. Since 2008, 29 distinguished university researchers have been awarded NSSEFF grants that have resulted in teams of more than 150 students, postdoctoral scholars and faculty.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Science, Mathematics And Research for Transformation (SMART) Defense Education Program	31.167	56.201	53.285

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601120D8Z: *National Defense Education Program (NDEP)*	PROJECT P120: *National Defense Education Program (NDEP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: SMART Defense Education Program awards undergraduate and graduate scholarships to students earning degrees in science, engineering and mathematics disciplines of critical importance to national security and the DoD. SMART is designed to ensure that DoD has a high quality, world-class STEM workforce to meet DoD's needs and enhance DoD's innovative capacities. As a scholarship-for-service program, SMART participants commit to one year of DoD employment for each year of academic support received. SMART students transition primarily into DoD laboratories. In addition to quality talent, the SMART program assists in increasing the scientific and technical knowledge base in subjects of importance to national security through the various master's theses and doctoral dissertations completed in DoD-relevant topic areas. ***FY 2010 Accomplishments:*** • Awarded 300 additional new scholarships to undergraduate and graduate students, which increased the number of scholarships awarded in 2009 by 15%. • Sustained the trend of selecting high quality students. The average GPA for 2010 awardees: 3.73. • Increased the number of applications reviewed by 70% (2600). • The demand for SMART scholars by DoD facilities increased by 18%. • Transitioning 140 SMART graduates (71 BS, 38 MS, and 31 PhD) into DoD workforce. • Increased the number of DoD sponsoring facilities by 11%. • Increased the percentage of reviewers from HBCUs/MSIs from 1% to 3%. • Developed a management information system for historical and current participants (approximately 900). ***FY 2011 Plans:*** • Emphasize outreach to eligible applicants from underrepresented groups such as women and minorities, veterans, and individuals separating from the Services. • Increase the number of eligible applicants as well as reviewers from Historically-Black Colleges and Universities and Minority-Serving Institutions (HBCU/MSIs). • Develop and institute best practices for mentoring and workforce development initiatives for current participants. • Transition approximately 250 SMART participants into the DoD workforce. • Select new participants based on available funding. ***FY 2012 Plans:*** • Examine the effectiveness of efforts to increase the number of eligible applicants from underrepresented groups such as women and minorities, veterans, and individuals separating from the Services. • Increase the number of eligible applicants as well as application reviewers from HBCUs/MSIs.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601120D8Z: *National Defense Education Program (NDEP)*	PROJECT P120: *National Defense Education Program (NDEP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Assess the mentoring and workforce development initiatives for current participants. • Transition approximately 250 participants into the DoD workforce. • Select new participants based on available funding.			
Title: National Security Science and Engineering Faculty Fellowship (NSSEFF)	32.452	36.124	31.000
Description: NSSEFF helps to ensure that our Nation has an active, long-term and aggressive research portfolio that attracts the foremost creative, innovative and productive university researchers and their students. Objectives of the program are to: •Support scientific research that may lead to extraordinary outcomes •Educate and train outstanding student and post-doctoral researchers for the defense and national security workforce •Foster long-term relationships between outstanding university researchers and the DoD •Familiarize select university researchers and their students with DoD's current and future challenges •Increase the number of exceptionally talented technical experts that are contributing to DoD's mission and upon whom DoD may draw to serve on advisory boards, panels, and groups The program funds distinguished university researchers for the purpose of conducting innovative basic research in areas of interest to DoD. Ensuring that students are actively engaged in conducting research funded by the DoD is an important priority. ***FY 2010 Accomplishments:*** • Selected 11 NSSEFF Fellows following a merit review of nearly 700 eligible white papers by over 100 reviewers from government and academia. • Offered internship opportunities for NSSEFF students in DoD laboratories across the three Services. • Organized a conference for NSSEFF-sponsored students and postdoctoral researchers with over 40 students and postdoctoral scholars presenting their research contributions to senior DoD leadership, program managers, and technical experts. • Provided students with visits to the Army Research Laboratory (ARL), the Naval Research Laboratory (NRL), and the Air Force Research Laboratory (AFRL) to gain enhanced understanding of DoD challenges, meet with DoD laboratory researchers, and discuss career opportunities. • Provided expertise to DoD through Fellows' participation in DoD symposia, attendance at DoD program reviews, and as reviewers for subsequent rounds of NSSEFF. • Described Fellows' research activities through the DoD's "Armed with Science" blog. • Piloted research experience for NSSEFF students. ***FY 2011 Plans:*** • Identify additional opportunities to engage students with DoD scientific and technical professionals.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601120D8Z: *National Defense Education Program (NDEP)*	PROJECT P120: *National Defense Education Program (NDEP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Integrate NSSEFF Fellows' research activities and outcomes into DoD's research community through participation in presentations, symposia, and program reviews. • Implement a revised NSSEFF strategic communication plan to further promote Fellows and students as points of expertise and strengthen the bridge between the DoD and academia. ***FY 2012 Plans:*** • Select the next cohort of Fellows. • Engage undergraduate students through post-doctoral students with DoD scientists and engineers to strengthen their understanding of topic areas of importance to DoD. • Continue to foster engagement opportunities for students and Fellows with DoD's scientific and technical community.			
Title: K-12 ***Description:*** K-12 inspires and develops our Nation's future STEM workforce and its citizenry in disciplines of critical importance to national and DoD STEM needs. Through collaborative partnerships in local communities across the United States, DoD STEM professionals serve as content experts with skills and talent to provide meaningful and effective informal school-based and after-school experiential STEM learning opportunities. DoD experts enrich the communities near military, laboratory, and other DoD facilities by serving as role models in encouraging the pursuit of higher education studies and careers in STEM, providing mentorship to students currently underrepresented in STEM career fields, and increasing the emphasis on 21st Century Learning Skills including adaptability, complex communication and social skills, non-routine problem solving, self-management and self-development, and systems thinking (National Research Council 2010). ***FY 2010 Accomplishments:*** • Provided outreach to more than 180,000 students and their parents and over 8,000 teachers, and engaged parents in DoD schools and communities. • Partnered with local schools in 26 states to conduct K-12 STEM hands-on and outreach activities. • Facilitated the engagement of more than 1,750 DoD laboratory scientific experts with teachers and students inside and outside of the classroom for immersive learning experiences. • Continued support of academic competition opportunities for students. • Increased the number DoD professionals serving as mentors and coaches from 43 to 111 teams. • Increased the number of students participating in competitions, the number of teams and training workshops for teams, the use of DoD laboratory space for competition entry development, and efforts to recruit new teams and students. • Supported the use of DoD equipment to enable students' learning experiences.	11.704	17.586	17.306

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Sponsored ten top performing students from high schools through the United States to attend the Research Science Institute (RSI) at the Massachusetts Institute of Technology. These students participated in a six-week internship and conducted scientific research alongside top researchers at MIT. All participants reported the results of their work at the Institute, prepared papers and oral presentations at a level appropriate for an academic conference. • Promoted videos that demonstrate research being conducted at DoD laboratories through online outlets such as YouTube and the DoD blog "Armed with Science," and achieved more than 65,000 views of individual videos and citations by more than 20,000 blogs within two days. ***FY 2011 Plans:*** • Increase the number of DoD laboratory SMEs engaged in partnerships with schools, community colleges, universities and science centers from 2-3 to 5-8 in local communities across the U.S. where DoD scientists and engineers are serving as role models and subject matter experts in school day and after-school activities including summer camps and competitions. • Implement effective outreach strategies through digital and electronic environments to reach students, educators, and families. • Infuse the incorporation of 21st Century Learning Skills (National Research Council, 2010) into program materials to enrich student learning. • Continue to provide summer camp and national competition opportunities for students and teachers. • Continue to utilize diverse and innovative media outlets to feature scientific and technological research conducted at DoD laboratories to encourage student interest in the DoD and STEM disciplines and enhance teachers' instructional content. ***FY 2012 Plans:*** • Leverage and increase the number of partnerships in local communities across the U.S. where DoD scientists and engineers are serving as role models and subject matter experts in school-based and after-school activities including competitions. • Leverage and increase effective outreach strategies through digital and electronic environments to reach today's students, educators, and families. • Leverage and continue to infuse 21st Century Learning Skills (National Research Council, 2010) into program materials to enrich student learning. • Continue to provide after school programs, summer camp and national competition opportunities for students and teachers. • Leverage and continue to utilize diverse and innovative media outlets to feature scientific and technological research conducted at DoD laboratories to encourage student interest in the DoD and STEM disciplines and enhance teachers' instructional content.			
Accomplishments/Planned Programs Subtotals	75.323	109.911	101.591

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	**R-1 ITEM NOMENCLATURE** PE 0601120D8Z: *National Defense Education Program (NDEP)*	**PROJECT** P120: *National Defense Education Program (NDEP)*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance Metrics within the National Defense Education Program:

1) Increase the number of STEM undergraduates and graduates that are transitioned into the DoD workforce.

2) Increase directly and indirectly the connectivity of NDEP participants with DoD.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	18.109	22.448	21.592	-	21.592	20.267	21.520	22.558	23.220	Continuing	Continuing
P000: *Insensitive Munitions*	14.291	14.735	14.425	-	14.425	14.611	14.916	15.246	15.696	Continuing	Continuing
P204: *Enabling Fuze Technology*	3.818	7.713	7.167	-	7.167	5.656	6.604	7.312	7.524	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program addresses applied research associated with improving the lethality, reliability, safety and survivability of munitions and weapon systems. The goal is to develop and demonstrate joint enabling technologies that can be used by Program Managers as they develop their specific weapon programs. The program invests in and demonstrates technologies from a Joint Service perspective, thus insuring the development of technology with the broadest applicability while avoiding duplication of efforts.

Munition Area Technology Groups (MATGs) and Fuze Area Technology Groups (FATGs) have been established for each munition and capability area and are tasked with 1) coordinating, establishing, and maintaining five, ten, and fifteen-year technology development plans and roadmaps, 2) coordinating biannual meetings to review technical and programmatic details of each funded and proposed effort, 3) developing and submitting Technology Transition Agreements in coordination with appropriate Program Executive Officers (PEOs) for insertion in their Insensitive Munitions (IM) Strategic Plans / Fuze Technology Development Plan, and 4) interfacing with other MATGs / FATGs and IM / fuze science and technology projects as appropriate. The Joint Insensitive Munitions Technology Program (JIMTP) and Joint Fuze Technology Program (JFTP) will utilize a Technical Advisory Committee (TAC) (consisting of senior DoD and DOE laboratory representatives and senior Munitions PEO representatives) to provide program oversight, policy, direction and priorities during its annual meeting.

The IM effort will demonstrate enabling technologies needed to develop weapons in compliance with requirements established in United States Code, Title 10, Chapter 141, Section 2389 and DoDI 5000.1. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority munitions identified in the PEO IM Strategic Plans. Mature demonstrated IM technology can be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other non-compliant munitions within their portfolios.

Under the JIMTP, investments are focused on five Munition Areas: High Performance Rocket Propulsion, Minimum Signature Rocket Propulsion, Blast and Fragmentation Warheads, Anti-Armor Warheads, and Large Caliber Gun Propulsion. MATGs, under tri-service leadership, have developed technology roadmaps for each Munition Area which are used to guide investments based on goals consistent with the DoD IM Strategic Plan. These IM technologies, alone or in combination, will be incorporated in hardware, simulating real-world munitions, to demonstrate their utility and feasibility as part of Technology Transition Agreements with PEOs.

The Enabling Fuze Technology effort will also demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the Guidance for Development of the Force (GDF), the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority capabilities and technology needs identified and validated by the PEOs and the Heads of the Service Science

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*

and Technology (S&T) communities. In this way, promising multi-point initiation architectures, high reliability fuze architectures, survivable components, modular fuze packaging, and components produced based on ease of manufacturing can be integrated into a munition configuration and its ability to address required capability needs can be validated. Mature fuze technology can be transitioned, thereby decreasing program costs and schedule risk and facilitating their spin-off into other munitions within their portfolios.

Under the JFTP, investments are focused on specific capability areas that have been identified by Department strategic guidance and current shortfalls in weapon systems and will be validated by the PEOs and the Heads of the Service S&T communities. These four capability areas are: 1) Hard Target Survivable Fuzing, 2) Tailorable Effects Weapon Fuzing, 3) High Reliability Fuzing, 4) and Enabling Fuze Technologies and Common Architecture.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	22.669	22.448	22.179	-	22.179
Current President's Budget	18.109	22.448	21.592	-	21.592
Total Adjustments	-4.560	-	-0.587	-	-0.587
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.550	-			
• SBIR/STTR Transfer	-0.121	-			
• Other	-3.889	-	-	-	-
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.557	-	-0.557
• Economic Assumptions	-	-	-0.030	-	-0.030

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction of in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Includes a reduction of $0.030 M for economic assumptions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P000: *Insensitive Munitions*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P000: *Insensitive Munitions*	14.291	14.735	14.425	-	14.425	14.611	14.916	15.246	15.696	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Joint Insensitive Munitions (IM) Technology Program (JIMTP) is aimed at developing the enabling technologies needed to build weapons in compliance with requirements established in statute (United States Code, Title 10, Chapter 141, Section 2389) and regulation (DoDI 5000.1 and CJCSI 3170.01F). Using technology available today, the Department has incrementally improved the IM response of our current munitions. New munitions which have fully implemented current IM technology and design practices have been able to achieve IM compliance. However, these have been the most easily solved problems. Without new technology, future variants of current weapon systems will have the same, or worse, response to IM stimuli (i.e., they will not improve with the technology available today). New weapon developments will face similar challenges.

The JIMTP, investments are focused on five Munition Areas: High Performance Rocket Propulsion, Minimum Signature Rocket Propulsion, Blast and Fragmentation Warheads, Anti-Armor Warheads, and Large Caliber Gun Propulsion. Munition Area Technology Groups (MATGs), under tri-service leadership, have developed technology roadmaps for each Munition Area which are used to guide investments based on goals consistent with the DoD IM Strategic Plan. The program is structured around these five areas with clear cross-cutting tasks.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: High Performance Rocket Propulsion	2.103	2.648	2.697
Description: High Performance Rocket Propulsion is focused on the development and demonstration of technologies to improve the IM response of High Performance Propulsion systems (rocket motors with Ammonium Perchlorate and with or without a metal fuel) for rockets and missiles launched from air, ground and sea platforms. These technologies, when applied to rocket motors, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Operating conditions may be controlled or widely varying in both temperature and vibration. Technologies include, but are not limited to, rocket propellant ingredients (including synthesis, characterization and scale-up), reduced smoke or smokey propellants (including formulation, characterization and scale-up), rocket motor case design, materials for active and passive thermal mitigation, shock mitigation materials and techniques, passive and active coatings, active and passive venting techniques for motor cases or containers, ignition systems, sensors and thrust mitigation techniques. The 5-10-15 year goals of the High Performane Propulsion MATG are concentrated on solving the IM response of missile propulsions systems due to Fragment Impacts and Slow Cookoff for the majority of High Performance Propulsion rocket motors, and solving the Fast Cookoff response of very large High Performance Propulsion motors.			
FY 2010 Accomplishments: -Continued development of extinguishable high performance rocket propellants, started characterization and propellant formulation down-selection work.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P000: *Insensitive Munitions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Conducted large rocket motor flight termination design trade and analysis tests with inert propellants. -Conducted large rocket motor fast cook-off mitigation system conceptual design trade and analysis, as well as propellant confinement characterization studies to gain insight into the remaining material strength as well as mitigation system activation criteria -Completed energetic material coating process at 500 gram level, as well as characterization and subscale evaluations to determine the coating's influence on responses to IM thermal threats. -Scaled up reduced smoke propellant at the 1 pint scale with acceptable processing, safety, mechanical and sub scale slow cook-off properties and conduct sub scale IM tests. -Conducted electrochemical manufacturing feasibility study for novel salts, producing 100 gram sample size and developed analytical methods to determine the concentration levels of novel salt in ammonium perchlorate matrices. ***FY 2011 Plans:*** -Complete scale up of extinguishable high performance rocket propellants to 1 gallon size batches and conduct IM tests on down-selected formulation. -Conduct sub-scale fast cook-off testing to demonstrate mitigation methodology. -Complete sensor network design and conduct fast cook-off testing; select sensor network technologies for BA 6.3 demonstration. -Scale up reduced smoke propellant to the 1 and 5 gallon scale with acceptable processing, safety, mechanical properties to enable small-scale motor testing and IM tests. -Formulate and refine the processing of impregnated fibers in composite cases. Conduct safety and environmental testing. -Complete scale up of high performance rocket propellants to 1 pint size batches and conduct mechanical and ballistic properties testing. -Scale up formulation to 5 pound scale quantity and conduct safety and mechanical properties testing. ***FY 2012 Plans:*** -Complete reduced smoke propellant evaluation and IM tests. Conduct propellant formulation efforts to produce burn or no-reaction response for fragment impact and fast cook-off events. -Study thermal and mechanical responses of composite cases to slow cook-off and aerodynamic heating. -Complete scale up of high performance rocket propellants to 1 gallon size batches, refine processing procedures and conduct sensitivity and safety testing. -Design, analyze and build small scale motors ready for testing.			
Title: Minimum Signature Rocket Propulsion ***Description:*** Minimum Signature Rocket Propulsion is focused on the development and demonstration of technologies to improve the IM response of Minimum Signature Rocket Propulsion Technologies. The development and demonstration of	2.955	3.593	3.640

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P000: *Insensitive Munitions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

minimum signature (MS) rocket technologies, that when applied to munition systems, will improve munition IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Topics include but are not limited to MS rocket propellant formulations, ingredients for MS propellant formulations (including synthesis, characterization and scale-up), case and packaging design, active and passive venting techniques, rocket motor case design, ignition systems and thrust mitigation techniques. Of particular interest are technologies toward higher burning rate MS propellants with state-of-the-art energy and reduced shock sensitivity. The 5-10-15 year goals Miniature Signature Propulsion MATG are concentrated on solving the IM response of missile propulsion systems due to Fragment Impact, Slow Cook-Off, and Shaped Charge Jet threats.

FY 2010 Accomplishments:

-Incorporated novel high-nitrogen ingredients, that exhibit reduced sensitivity in various propellant formulations to determine best candidate and down-selected to two candidates for further study and optimization. Used modeling and simulation to predict basic molecular properties and bond types to predict molecular stability.
-Demonstrated several case venting designs in composite and new cases to determine feasible approaches.
-Produced 1.0 kg of novel ingredient, to evaluate material purity and assess safety, compatibility and stability with the selected propellant binder system.
-Continued binder system alternatives assessment and scaled up production to 1 pint size mix. Conducted small-scale tests to determine IM performance.
-Synthesized and evaluated various bonding agents' mechanical properties to improve impact response and performance. Scaled-up formulations to pint size mixes for burning rate testing.
-Synthesized novel ingredients in multi-gram quantities for hazard analysis and ingredient compatibility testing, and generated small propellant samples for testing.
-Synthesized and produced 10 gram quantity new propellant formulation to enable initial characterization testing to be completed.

FY 2011 Plans:

-Conduct small scale IM tests and compare against prior baseline and candidate results to provide down-selected formulations for further study The resultant down-selected propellant formulations will then be optimized and subjected to various tests.
-Demonstrate passive venting design for slow cook-off IM test.
-Complete binder system alternatives assessment and down-select formulation for scale up to 1 gallon size mix.
-Scale-up to gallon mix batches and evaluate bonding agents in impact and shock tests to determine effectiveness. Manufacture analogue motors with selected bonding agent and conduct impact testing. Select best candidate for transition to PE 0603000D8Z.
-Scale up novel ingredients to pint scale mixes and conduct mechanical, aging and thermal testing to determine propellant characteristics.
-Synthesize and characterize new propellant to 100-gram scale to support initial IM evaluation testing

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P000: *Insensitive Munitions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Synthesize and produce material to 5-gram quantity batches to conduct thermal stability studies. ***FY 2012 Plans:*** -Optimized candidates will be scaled-up to further characterize their initial ballistic performance and sensitivity properties, ballistics and performance verification via 7" baseline motor configuration and full scale IM tests. Conduct sub-scale motor performance tests and larger scale IM tests with final formula down-selection and transition to 0603000D8Z for demonstration. -Complete binder system alternatives full scale test using 1 gallon size mixes for transition to 0603000D8Z. -Scale-up to 1 pint mixes and conduct impact and cook-off testing to determine IM responses of formulation. -Scale up and synthesize to 25-gram scale and conduct small-scale IM tests.			
Title: Blast and Fragmentation Warheads ***Description:*** Blast and Fragmentation Warheads is focused on the development and demonstration of technologies to improve the IM response of Blast / Fragmentation munitions. The development and demonstration of explosive ingredients, explosives and warhead and fuze technologies that, when applied to munitions, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance are of particular interest. Munition operating conditions may be controlled or have widely varying environmental conditions, such as temperature and vibration, and other factors such as cost, availability, reliability may be critically important depending on the intended munition application. Applications vary but include high performance warhead fills, booster explosives, bulk demolition charges, and bulk fills for blast and/or fragmentation charges. Technologies include but are not limited to new ingredient synthesis and characterization, initial formulation development, scale-up, warhead/charge configuration, venting techniques for both munitions and their containers, protection / packaging materials and systems, shock mitigation liners, initiation devices, techniques, and technologies. The 5-10-15 year goals of the Blast and Fragmentation Warhead MATG are concentrated on solving the IM response of blast fragment warheads to the Sympathetic Detonation, Fast Cookoff and Shaped Charge Jet threats. ***FY 2010 Accomplishments:*** -Completed characterization studies on first generation of eutectic based-insensitive explosives. -Optimized synthesis process to produce 1.2 kg batches of a melt castable explosive and completed characterization studies. -Produced 10 kg quantities of liquid energetic material for characterization of detonation properties. -Conducted large scale initiation experiments with insensitive materials, to successfully demonstrate the ability to initiate the materials. -Completed production work of novel ingredient for subscale IM tests and novel ingredient formulation development efforts for synthesis to 5 gram scale mixes. -Completed development of general purpose bomb main-charge explosive formulations and sensitivity assessments in laboratory environment.	3.825	4.082	3.801

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P000: *Insensitive Munitions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Accomplished sensitivity testing and performance testing on specially coated materials. Scaled up production to 100 gram size batches. -Identified optimal processing conditions and critical factors affecting scale-up of unique formulation, enabling production of 10 pound scale batches of mixture completing testing of safety characteristics, performance and shock sensitivity for transition to 0603000D8Z. -Started proof of concept and manufacturing assessment for unique missile warhead explosive. -Completed materials characterization work in order to quantitatively understand the interaction of a unique sensitization method with the various materials to assist in the experimental apparatus design. ***FY 2011 Plans:*** -Complete initiation studies and transition efforts to 0603000D8Z.. -Scale up novel ingredient formulation to 150 gram batches and conduct safety and sensitivity testing. Complete sub-scale IM testing on optimized formulation using novel ingredient. -Scale up specially coated materials to 100 gram production capability in order to characterize material and conduct variable confinement testing. Conduct characterization and IM testing to validate improvements in reactions to stimuli. -Conclude proof of concept and manufacturing studies, begin weaponization study, and demonstration of IM characteristics of unique missile warhead explosive. -Design and fabrication of a unique sensitization method application fixture. ***FY 2012 Plans:*** -Down-select novel ingredient material formulation and complete sub-scale testing and begin transition to 0603000D8Z. -Conclude weaponization study, and demonstration of IM characteristics of unique missile warhead explosive material. -Down-select materials and sensitization process in order to conduct device scale testing to validate the process and transition to 0603000D8Z.			
Title: Anti-Armor Warheads ***Description:*** Anti-Armor Warheads is focused on the development and demonstration of explosive ingredients, explosives, warhead and fuze technologies for improving IM of Anti-Armor Warhead munitions. The development of explosive ingredients, explosives and warhead and fuze technologies that, when applied to munitions, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Munition operating conditions may be controlled or have widely varying environmental conditions, such as temperature and vibration, and other factors such as cost, availability, reliability may be critically important depending on the intended munition application. Applications vary but include high performance warhead fills, booster explosives, and all other technology to mitigate the violent response of Anti-Armor Warhead munitions to IM threats. Technologies include but are not limited to new ingredient synthesis and characterization, initial	2.655	2.347	1.953

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P000: *Insensitive Munitions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
formulation development, scale-up, warhead/charge configuration, venting techniques for both munitions and their containers, protection/packaging materials and systems, shock mitigation liners, initiation devices, techniques, and technologies. The 5-10-15 year goals of the Anti-Armor Warhead MATG are concentrated on solving the IM response of anti-armor warheads to the Fragment Impact and Slow Cookoff threats and a 5 year goal of solving Sympathetic Detonation threats, with a 10-15 year goal of resolving the IM response to the Shaped Charge Jet threat. ***FY 2010 Accomplishments:*** -Assessed IM characteristics and demonstrated gallon size mix processability of additional emerging binder approaches for cast cured explosives for use in anti-armor IM warheads. -Completed evaluation of pressed explosives to include fragment and bullet impact testing. -Conducted characterization tests and developed screening test for use on pressed explosives. Scaled-up most promising formulation to 5 pound quantity. -Conducted scale-up and shock sensitivity testing on energetic binders enabling validation of new small scale test process to determine binder effectiveness. -Continued initial formulation development of less-sensitive combined effects explosives and completed initial IM tests. -Started novel coating technique evaluation for explosive materials. ***FY 2011 Plans:*** -Optimize processing procedure and complete characterization studies for cast cured explosives. Conduct accelerated aging study and various safety and IM tests to ensure acceptable aging properties of explosive material. -Complete fragment impact screening test analysis and prepare for transition to 0603000D8Z. -Complete characterization testing for formulation candidates, down-select, scale-up formulations, and complete IM/performance tests for two candidates. -Continue IM tests for novel coating technique evaluation for explosive materials. ***FY 2012 Plans:*** -Conduct IM technology studies in the areas of initiation/booster technology, explosive formulations, and warhead venting to develop warheads capable of producing deflagration and explosive type reactions for shaped charge jet and fragment impact threats.			
Title: Large Caliber Gun Propulsion ***Description:*** Large Caliber Gun Propulsion is focused on the development and demonstration of technologies in the area of Gun Propulsion Technologies. The development and demonstration of gun propulsion technologies, that when applied to munition systems, will improve munition IM response to one or more threats, while not degrading the response to other IM threats and	2.753	2.065	2.334

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P000: *Insensitive Munitions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
at least maintaining munition performance. Topics include but are not limited to gun propellant formulations, ingredients for gun propellant formulations (including synthesis, characterization and scale-up), cartridge case and packaging design, active and passive venting techniques, reduced sensitivity primer propellant and primer systems and robust primers for insensitive propellants. Applications vary, but include both large and medium caliber munitions. Operating requirements vary, and other factors such as barrel life and operation over varying environmental conditions may be critically important depending on the intended munition application. The 5-10-15 year goals of the Large Caliber Gun Propulsion MATG are concentrated on solving the IM response of gun propulsion munitions to Fragment Impact, Shaped Charge Jet, and Slow Cookoff threats. ***FY 2010 Accomplishments:*** -Completed phase III evaluation of sensitivity in laboratory environment of novel propellant formulation less sensitive to thermal and shock stimuli. -Completed phase III propellant formulation and scale-up efforts, as well as IM testing. Transitioned selected propellant to 0603000D8Z program. -Completed full-scale primer design and demonstration testing. Manufactured large-scale quantities and completed characterization and propellant formulation mixes of novel propellant binder. -Started small-scale characterization and propellant formulation optimization mixes using novel propellant binder. -Conducted instrumented ballistic simulator tests and began modification of required modeling and simulation tools for fragment impact studies. ***FY 2011 Plans:*** -Conduct small-scale testing and characterization efforts, as well as formulation down-selection effort. -Conduct instrumented ballistic simulator tests and complete modification of required modeling and simulation tools for slow cookoff studies. -Synthesize and scale-up energetic salts to 500 gram quantity and conduct characterization testing to support formulation and go/no-go decision. ***FY 2012 Plans:*** -Manufacture large-scale quantities and complete full-scale and IM tests of down-selected propellant formulation mixes of novel propellant binder. -Conduct sub-scale ballistic and IM testing. -Conduct instrumented ballistic simulator tests, fabricate hardware and finalize venting solution for fragment impact and slow cook off.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P000: *Insensitive Munitions*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Continue formulation development to produce optimum IM properties and scale-up to manufacture 3 kilogram batches. Conduct various tests to validate IM properties and suitability for gun propellant.			
Accomplishments/Planned Programs Subtotals	14.291	14.735	14.425

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0603000D8Z P002: *BA 3 Insensitive Munitions Advanced Technology*	13.534	16.720	19.720		19.720	21.360	21.384	23.086	23.779	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

1) Transitions of technologies developed by the Program are tracked and documented using DoD/NASA Technical Readiness Level (TRL) scale.
2) MATG Technology Roadmaps are prepared, evaluated, and analyzed by JIMTP management and technical staff.
3) Chairman's Annual Assessments for each MATG are critically reviewed by the TAC to determine progress, transition plans, and relevance of each project.
4) Project progress toward goals and milestones is assessed at each MATG meeting.
5) Annual technical reports and papers are tracked and documented for the Program.
6) External Peer Review of Projects conducted as part of Joint Army/Navy/NASA/Air Force meetings.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P204: *Enabling Fuze Technology*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P204: *Enabling Fuze Technology*	3.818	7.713	7.167	-	7.167	5.656	6.604	7.312	7.524	Continuing	Continuing

A. Mission Description and Budget Item Justification

This RDT&E effort will demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the Guidance for Development of the Force (GDF), the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will develop enabling technologies at the laboratory scale and transition them into 6.3 demonstration programs for weapons where priority capabilities and technology needs have been identified and validated by the Program Executive Officers (PEOs) and the Heads of the Service S&T communities. Mature 6.2 fuze technologies will be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other munitions within their portfolios.

Under the Joint Fuze Technology Program (JFTP), investments are focused on specific capability areas that have been identified by Department strategic guidance and current shortfalls in weapon systems and validated by the PEOs and Heads of the Service S&T communities. These four capability areas are: 1) Hard Target Survivable Fuzing, 2) Tailorable Effects (TE) Weapon Fuzing, 3) High Reliability Fuzing, 4) and Enabling Fuze Technologies and Common Architecture.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Hard Target Fuzing	1.145	1.880	1.670
Description: The Hard Target Fuzing challenges are grouped into three Technology Areas. Improved Modeling and Simulation Capabilities provide the validated computational tools necessary for hard target applications. Basic Phenomenology & Understanding of the Fuze Environment is the science-based endeavor of providing the test equipment, instrumentation, and analysis techniques for experimentation and data gathering necessary for Hardware Development - Next Generation Fuzing. This technology area aims to increase the effectiveness of facility denial munitions by improving the prediction tools and testing methodologies to evaluate the survivability and functionality of legacy and future fuzes. Development of these technologies will enable next generation boosted and hypersonic penetrators to execute missions against hardened and deeply buried targets.			
FY 2010 Accomplishments: - Started projects on hard target penetration weapon systems based modeling and simulation tool to determine fuze response to the weapon dynamics. - Initiated solid mechanics modeling and simulation technology projects to provide accurate material properties. - Began project to create a series of experimental and modeling capabilities that will form the basis of a high speed fuze survivability protocol for testing fuzes in the boosted and high speed penetration regimes.			
FY 2011 Plans: - Develop underlying technologies and testing methods to define the high-speed penetration environment.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P204: *Enabling Fuze Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Begin verification of hydrocode/EPIC 22 modeling and simulation tools via hard target weapon instrumented testing. - The hard target weapon community plans to integrate the testing protocol in future boosted and high speed penetrator development programs. - Develop survivable modular fuze technology for multi-role common miniature munitions with distributed/embedded fuzes. ***FY 2012 Plans:*** - Develop and validate modeling and simulation code using high fidelity, multi-scale simulation techniques. - Adapt JFTP developed testing protocol in boosted and high speed penetrator development programs. - Apply survivable modular fuze technology for multi-common miniature munitions with distributed/embedded fuzes.			
Title: Tailorable Effects Fuzing ***Description:*** This area focuses on developing fuzing for tailorable effects weapons that encompasses the ability to selectively vary the output of the weapon (Dial-a-Yield) and/or the ability to generate selectable effects (directed blast, fragmentation); develop initiation and multi-point technologies to include electronic safe and arm based multi-point initiators for tunable output – scalable yield warheads; MEMS based multi-point initiators for tunable output/scalable yield warheads; and smart fuzing for tailorable effects weapons. These technologies will enable weapons that can effectively defeat a variety of targets while minimizing unintentional collateral effects. ***FY 2010 Accomplishments:*** - Began development of tailorable initiation technologies including a) multi-point plug-n-play, b) lower energy detonators/initiators and c) miniaturized explosive trains and d) multi-point initiation using energetic tracks, traces or deposition. - Started efforts in low-voltage command/arm system for distributed fuzing systems to enable tailorable ***FY 2011 Plans:*** - Demonstrate and transition miniature fire-set components for 6.3 tailorable effects initiation warhead systems. - Begin development of controllable explosive sensitivity technologies that provide the ability to selectively vary the sensitivity of energetic materials. - Apply initiation architecture and control technologies for development of candidate effects and yield candidate warheads. ***FY 2012 Plans:*** - Test and demonstrate detonator, initiation and fireset technologies. - Develop Tailorable Effects modeling and simulation using hydrocode. - Develop harden, Tailorable Effects firing systems for missile and projectile warheads to survive the high-g shock environments associated with impact with Military Operations in Urban Terrain (MOUT) targets.	0.764	2.083	1.953
Title: High Reliability Fuzing	1.145	1.875	1.766

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P204: *Enabling Fuze Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Develop high reliability fuzing architectures, fuzing components, and Unexploded Ordance (UXO) reduction features. These technologies will enable the next generation of cluster munitions to achieve the required greater than 99% reliability goal. Evolving DoD emphasis on increased weapon system reliability is driving the need to consider new and novel approaches for achieving increased fuze reliability while maintaining or enhancing fuze design safety. DoD policy, higher weapon reliability expectations and harsher weapon system operational requirements are dictating the need for higher fuze reliability than available using current technologies. ***FY 2010 Accomplishments:*** - Developed concepts for high reliability fuze architecture for cluster munitions fuzing. - Began development of target detection sensor and safety and arming device that would provide an increase in the overall fuze reliability. ***FY 2011 Plans:*** Research and development of novel technologies for UXO reduction features including fuze mechanisms and initiation energetics to eliminate any unexploded ordnance. - Build high reliability fuze architecture technology components that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. - Next generation cluster munition fuze design and architecture will be down selected, brassboard submunition fuzes will be fabricated and evaluated; explosive train tests, static expulsion tests and engineering tests will be conducted. ***FY 2012 Plans:*** - Demonstrate high reliability fuze architecture concepts that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. - Next generation cluster munition fuze design and architecture will be updated, component prototypes will be produced and performance and reliability tests conducted in ballistic and harsh environment testing.			
Title: Enabling Fuze Technologies ***Description:*** Develop common / modular fuze architecture; innovative fuze component technologies; sensors; next generation fuze setting capability, tools and modeling; and fuzing power sources. These fuzing technologies will provide smaller, more cost effective solutions while meeting or exceeding the performance of existing technologies. Development of these technologies will enable future weapon applications to be more mission adaptive and smaller along with improve target detection capabilities. ***FY 2010 Accomplishments:*** - Began development for proximity fuze sensors and electronics for detecting targets, impact, voids, and media which are highly resistant to exploitation.	0.764	1.875	1.778

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P204: *Enabling Fuze Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Initiated efforts for thin film/conformal thermal batteries for fuzing which will result in cheaper, conformal, smaller, cooler thermal batteries with higher energy/power densities. ***FY 2011 Plans:*** - Develop and build exploitation resistant proximity fuze sensors and electronics technology hardware for detecting targets, impact, voids, and media. - Develop fuze power source technology and concepts that include functionality that precludes the inadvertent release of "stored energy" such as Micro power sources and energy harvesting components. - Conduct assessments of common fuze architecture technologies: safety components, modular electronics, sensors, interfaces, and packaging. ***FY 2012 Plans:*** - The establishment of a modular, open fuze architecture is a technology enabling product that would establish a defined system interface architecture between various fuze subsystems. - Evaluate proximity fuze sensor, electronics and algorithm technologies in performance and functional testing in air-gun and ballistic environments.			
Accomplishments/Planned Programs Subtotals	3.818	7.713	7.167

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0603000D8Z P301: *BA 3 Enabling Fuze Advanced Technology*	0.000	3.522	4.947		4.947	6.098	6.835	8.350	8.606	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

1) Transitions of technologies developed by the Program are tracked and documented using DoD/NASA Technical Readiness Level (TRL) scale.
2) FATG Technology Roadmaps are prepared, evaluated, and analyzed by JFTP management and technical staff.
3) Chairman's Annual Assessments for each FATG are critically reviewed by the TAC to determine progress, transition plans, and relevance of each project.
4) Project progress toward goals and milestones is assessed at each FATG meeting.
5) Annual technical reports and papers are tracked and documented for the Program.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*	PROJECT P204: *Enabling Fuze Technology*

6) Technology Transition Agreements in place with Munitions programs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602228D8Z: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	62.696	15.067	-	-	-	-	-	-	-	Continuing	Continuing
P489: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*	62.696	15.067	-	-	-	-	-	-	-	Continuing	Continuing

Note

The Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) program transfers from BA 2, PE 0602228D8Z to the Army in FY 2012.

A. Mission Description and Budget Item Justification

The HBCU/MI program provides support in fields of science and engineering that are important to national defense. The DoD HBCU/MI Program encourages participation of small minority schools as well as large minority research institutions. This competitive program provides support through grants or contracts for research, education assistance, instrumentation purchases, and technical assistance as described below:

• Research. The research grants are to further the knowledge in the basic scientific disciplines through theoretical and empirical activities. Collaborative research allows university professors to work directly with military laboratories or other universities.

• Education. Education assistance funds are used by minority institutions to strengthen their academic programs in science, technology, engineering, and mathematics (STEM) thereby increasing the number of under-represented minorities obtaining undergraduate and graduate degrees in these fields. These grants provide equipment, scholarships, cooperative work/study opportunities, visiting faculty programs, summer programs, and a variety of other enhancements designed to support students and to encourage them to pursue careers in STEM.

• Infrastructure. This program allows universities to purchase basic laboratory equipment for research and education program enhancements and highly sophisticated research instruments, such as lasers and spectrometers.

• Technical assistance. These funds are used to design programs that enhance the ability of minority institutions to successfully compete for future Defense funding. The objective is to assist the HBCU/MI community in areas such as proposal writing and administration of grants and contracts.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	**R-1 ITEM NOMENCLATURE** PE 0602228D8Z: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	66.553	15.067	15.245	-	15.245
Current President's Budget	62.696	15.067	-	-	-
Total Adjustments	-3.857	-	-15.245	-	-15.245
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-3.392	-			
• SBIR/STTR Transfer	-0.442	-			
• Other Program Adjustments	-0.023	-	-15.245	-	-15.245

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P489: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*		
Congressional Add: *Active Duty Training and Education Program*	2.000	-
Congressional Add: *Morehouse College, John H. Hopps Defense Research Scholars Program*	2.400	-
Congressional Add: *Thurgood Marshall College Fund Defense Leadership and Technology Initiative*	1.200	-
Congressional Add: *Instrumentation Program for Tribal Colleges*	2.475	-
Congressional Add Subtotals for Project: P489	8.075	-
Congressional Add Totals for all Projects	8.075	-

Change Summary Explanation

The Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) program transfers from BA 2, PE 0602228D8Z to the Army in FY 2012.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602228D8Z: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*	PROJECT P489: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P489: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*	62.696	15.067	-	-	-	-	-	-	-	Continuing	Continuing

Note

The Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) program transfers from BA 2, PE 0602228D8Z to the Army in FY 2012.

A. Mission Description and Budget Item Justification

The HBCU/MI program provides support in fields of science and engineering that are important to national defense. The DoD HBCU/MI Program encourages participation of small minority schools as well as large minority research institutions. This competitive program provides support through grants or contracts for research, education assistance, instrumentation purchases, and technical assistance as described below:

• Research. The research grants are to further the knowledge in the basic scientific disciplines through theoretical and empirical activities. Collaborative research allows university professors to work directly with military laboratories or other universities.

• Education. Education assistance funds are used by minority institutions to strengthen their academic programs in science, technology, engineering, and mathematics (STEM) thereby increasing the number of under-represented minorities obtaining undergraduate and graduate degrees in these fields. These grants provide equipment, scholarships, cooperative work/study opportunities, visiting faculty programs, summer programs, and a variety of other enhancements designed to support students and to encourage them to pursue careers in STEM.

• Infrastructure. This program allows universities to purchase basic laboratory equipment for research and education program enhancements and highly sophisticated research instruments, such as lasers and spectrometers.

• Technical assistance. These funds are used to design programs that enhance the ability of minority institutions to successfully compete for future Defense funding. The objective is to assist the HBCU/MI community in areas such as proposal writing and administration of grants and contracts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)	54.621	15.067	-
Description: The HBCU/MI program provides support for research and collaboration with DoD facilities and personnel. The research grants further knowledge in the basic physical scientific and engineering disciplines through theoretical and empirical activities. Collaborative research allows university professors to work directly with military laboratories or other universities.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	**R-1 ITEM NOMENCLATURE** PE 0602228D8Z: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*	**PROJECT** P489: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Developed and issued two solicitations. The first broad agency announcement (BAA), Tribal Colleges and Universities (TCUs) closed June 15, 2010. The solicitation afforded the TCU HBCU/MI community an opportunity to acquire 13 equipment grants to enhance STEM programs and to facilitate the education of students in research areas important to the DoD. The equipment grants are for a twelve-month performance period and will range from $0.132 to $0.400. The second HBCU/MI BAA for Centers of Excellence in Research and Education, basic research awards, and equipment grants closed August 6, 2010. Awards are scheduled for second quarter FY 2011. Initiated independent assessment of HBCU/MIs required by Section 242 of the FY 2009 National Defense Authorization Act. The results of the study will assist DoD to better understand the impact of the program and future direction. ***FY 2011 Plans:*** Develop and issue two solicitations: (1) HBCU/MI Core Program for research projects and equipment and (2) Tribal Colleges and Universities announcement for equipment grants. Continue efforts with HBCU/MIs to support research and collaboration with DoD facilities and personnel.			
Accomplishments/Planned Programs Subtotals	54.621	15.067	-

	FY 2010	FY 2011
Congressional Add: Active Duty Training and Education Program ***FY 2010 Accomplishments:*** Evaluated proposal from Benedict College. Award anticipated second quarter FY 2011.	2.000	-
Congressional Add: Morehouse College, John H. Hopps Defense Research Scholars Program ***FY 2010 Accomplishments:*** Grant awarded September 15, 2010.	2.400	-
Congressional Add: Thurgood Marshall College Fund Defense Leadership and Technology Initiative ***FY 2010 Accomplishments:*** Evaluated proposal. Grant award anticipated second quarter FY 2011.	1.200	-
Congressional Add: Instrumentation Program for Tribal Colleges	2.475	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602228D8Z: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*	PROJECT P489: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*

	FY 2010	FY 2011
FY 2010 Accomplishments: Thirteen equipment grants were awarded to enhance STEM programs and to facilitate the education of students in research areas important to the DoD.		
Congressional Adds Subtotals	8.075	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0601228D8Z: *HBCU/MI*	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Since 2007, the following data is collected as a grant requirement:

- Percent of students graduating with undergraduate degrees in Science, Mathematics, Engineering, and Technology fields.
- Percent of students pursuing graduate and Ph.D. degrees.
- Number of undergraduate students achieving specified GPA average.
- Number of students participating in the Centers of Excellence for Research and Engineering.
- Number of students working in Defense Laboratories.

This data will constitute the "Existing Baseline" for measurement and improvement in future years.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	31.913	32.830	37.916	-	37.916	38.359	38.545	44.114	45.408	Continuing	Continuing
P534: *Lincoln Laboratory*	28.061	29.596	31.441	-	31.441	34.073	34.241	39.703	40.868	Continuing	Continuing
P535: *Technical Intelligence*	3.852	3.234	3.475	-	3.475	3.786	3.804	4.411	4.540	Continuing	Continuing
P536: *Testbed for Comparative Analysis*	-	-	3.000	-	3.000	0.500	0.500	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

(U) The Lincoln Laboratory research line program (LL Program) is an advanced technology research and development effort conducted through a cost reimbursable contract with the Massachusetts Institute of Technology (MIT). The LL Program funds innovations that directly lead to the development of new system concepts, new technologies, and new components and materials.

The LL Program currently includes six core technologies and four technical initiatives:
(U) Advanced Electronics Technologies, with emphasis on development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to DoD sensors.
(U) Advanced Optical Communications, focusing on high-efficiency free-space optical communications links.
(U) Intelligence, Surveillance, and Reconnaissance, including the development of novel active and passive RF and electro-optic sensors useful for intelligence, surveillance, and reconnaissance applications, as well as advanced data exploitation techniques.
(U) Net-centric Operations, with an emphasis on developing and demonstrating the key technologies that will enable composable and dynamic multi-mission net-centric operations on the Global Information Grid.
(U) Decision Support, with the goal of developing and demonstrating fundamental technologies and architectures supporting real time decisions across large, dynamic, heterogeneous data sets.
(U) Homeland Protection, with the objective of developing and demonstrating architectures and the key technologies that support homeland protection.
(U) Technical Initiatives, including biological sciences to aid the warfighter, promote public health, and develop tools for biological research; cybersecurity technologies to develop new techniques for the protection of systems against cyber attack and exploitation; autonomous systems technologies with the objective of developing mobile, autonomous, robotic platforms that demonstrate key capabilities needed for a wide range of defense applications; and quantum information sciences to develop basic technologies that support the storage, transport, and computation of quantum information.

(U) Supporting these and other priority technology and capability areas are work efforts entitled Technical Intelligence and Testbed for Comparative Analysis:

(U) Technical Intelligence is working to develop a comprehensive understanding of technology emergence and advancement in a range of relevant scientific areas such as nanotechnology, directed energy, and propulsion. Some details are classified, but one focus area is working to establish a broad horizon scanning and technology

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*

forecasting capability through a collaborative effort by DOD and the Intelligence Community. This effort will develop insight into our relative position in science and technology around the world over time, as well as determine potential impacts on DOD capability development and future threat environments.

(U) The Testbed for Comparative Analysis will enable the evaluation of quantitative and horizon scanning and technology forecasting techniques for discovering disruptive technologies that may impact the DOD. This effort will provide the DOD with objective ways to evaluate the accuracy of existing and future horizon scanning and technology forecasting efforts.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	34.034	32.830	33.447	-	33.447
Current President's Budget	31.913	32.830	37.916	-	37.916
Total Adjustments	-2.121	-	4.469	-	4.469
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.195	-			
• SBIR/STTR Transfer	-1.000	-			
• Other Program Adjustments	-0.926	-	5.500	-	5.500
• Defense Efficiency - Reports, Boards, Studies, and Commissions	-	-	-0.978	-	-0.978
• Economic Assumptions	-	-	-0.053	-	-0.053

Change Summary Explanation

Baseline Review. As part of the Department of Defense reform agenda, implemented a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions. This included the addition of $3.000M for a Comparative AnalysisTestbed and $2.500M to the core program.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P534: *Lincoln Laboratory*	28.061	29.596	31.441	-	31.441	34.073	34.241	39.703	40.868	Continuing	Continuing

A. Mission Description and Budget Item Justification

(U) The Lincoln Laboratory research line program (LL Program) is an advanced technology research and development effort conducted through a cost reimbursable contract with the Massachusetts Institute of Technology (MIT). The LL Program funds innovations that directly lead to the development of new system concepts, new technologies, and new components and materials.

(U) The LL Program currently includes six core technologies and four technical initiatives:
(U) Advanced Electronics Technologies, with emphasis on development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to DoD sensors.
(U) Advanced Optical Communications, focusing on high-efficiency free-space optical communications links.
(U) Intelligence, Surveillance, and Reconnaissance, including the development of novel active and passive RF and electro-optic sensors useful for intelligence, surveillance, and reconnaissance applications, as well as advanced data exploitation techniques.
(U) Net-centric Operations, with an emphasis on developing and demonstrating the key technologies that will enable composable and dynamic multi-mission net-centric operations on the Global Information Grid.
(U) Decision Support, with the goal of developing and demonstrating fundamental technologies and architectures supporting real time decisions across large, dynamic, heterogeneous data sets.
(U) Homeland Protection, with the objective of developing and demonstrating architectures and the key technologies that support homeland protection.
(U) Technical Initiatives, including biological sciences to aid the warfighter, promote public health, and develop tools for biological research; cybersecurity technologies to develop new techniques for the protection of systems against cyber attack and exploitation; autonomous systems technologies with the objective of developing mobile, autonomous, robotic platforms that demonstrate key capabilities needed for a wide range of defense applications; and quantum information sciences to develop basic technologies that support the storage, transport, and computation of quantum information.

(U) Supporting these and other priority technology and capability areas, is a work effort entitled Technical Intelligence. Technical Intelligence supports comprehensive understanding of technology emergence and advancement in a range of relevant scientific areas such as nanotechnology, directed energy and propulsion. Some details are classified, but one effort focused on establishing a broad horizon scanning and technology forecasting effort is a collaborative effort by DOD and the Intelligence community. This effort will develop insight over time into our relative position in science and technology around the world and potential impacts on capability development and future threat environments.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Advanced Electronics Technology	6.900	6.981	7.068
FY 2010 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
(U) Developed technologies for imaging focal planes that enable new approaches to electro-optical sensors. Developed unique integrated circuit designs and processes for ultra-low power electronics, high data collection rates, or operation in stressing environments. Developed photonic integrated circuits components to enable advanced compact sensing systems. Developed novel high-power, frequency-agile sources for sensing. Received RD100 Award for Geiger-mode Avalanche Photodiode Focal Plane Array development. ***FY 2011 Plans:*** (U) Continue technology development for imaging focal planes through the use of an advanced set of design and fabrication tools. Develop advanced 3-D integrated electronics and imagers. Continue development of coherent photonics integrated circuit components. Continue development of frequency-agile sources for sensing. ***FY 2012 Plans:*** (U) Develop new imager and electronics architectures for multi-modal imaging. Develop photonics integrated-circuit-based coherent optical systems.			
Title: Advanced Optical Communications ***FY 2010 Accomplishments:*** (U) Developed technologies to increase the data rate of ultra sensitive communications links. Developed advanced channel equalization techniques to allow wide-band optical data transmission through scattering media. Received RD100 Award for development of Sub-wavelength-Separated Superconducting Nanowire Single-Photon Detector Arrays. ***FY 2011 Plans:*** (U) Evaluate novel optical communication schemes to further increase the operational utility of optical communications. Develop lower power, more sensitive receivers for optical communications. ***FY 2012 Plans:*** (U) Develop novel optical communication schemes and components for covert secure optical communications.	2.010	2.284	2.303
Title: Intelligence, Surveillance, and Reconnaissance (ISR) ***FY 2010 Accomplishments:*** (U) Continued to improve sensitivity and data throughput rate of infrared digital focal plane array surveillance camera. Continued to investigate MIMO radar architectures. Developed technologies for highly integrated RF front ends, including silicon-based transceivers for use in low cost and reconfigurable RF systems. Developed novel computer architectures designed specifically	5.080	6.844	5.757

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
for rapidly processing graph data relevant to military operations. Key developments of Digital-Pixel Focal Plane Arrays and Miniaturized Radio Frequency Four-Channel Receivers were recognized with RD100 Awards. ***FY 2011 Plans:*** (U) Continue development of lower size, weight and power reconfigurable RF systems. Continue development of computer architectures for graph analysis. Demonstrate multi-mission, UAV-based sensing, processing and data exploitation for Counter IED applications. Begin demonstration of large-scale Multi-Int data fusion for persistent surveillance. ***FY 2012 Plans:*** (U) Develop compact, low-power, multi-modal active imaging systems. Develop low SWaP integrated RF/electro-optics systems. Complete demonstration on Multi-INT persistent surveillance. Develop distributed ISR systems.			
Title: Net-centric Operations (NCO) ***FY 2010 Accomplishments:*** (U) Continued with the development of advanced, automated services and architectural features for net-centric operations. Demonstrated a second large scale field experiment incorporating additional NCO services. ***FY 2011 Plans:*** (U) Continue to add advanced architectural features and services useful for NCO. ***FY 2012 Plans:*** (U) Expand work to include secure net-centric operations, knowledge creation services, and automated verification of systems.	1.300	1.605	1.382
Title: Counter Terrorism Technologies ***FY 2010 Accomplishments:*** (U) Demonstrated advanced ISR and signals intelligence (SIGINT) capabilities, particularly for small UAVs, including the design and development of Ku-band synthetic aperture radar (SAR), performance testing of high-resolution camera payloads, and development of SIGINT sensor payloads. Designed and prototyped novel ultra-wideband digital beamforming array antenna appropriate for persistent counter-terrorism missions. ***FY 2011 Plans:*** (U) All Counter Terrorism Technology activities incorporated into ISR effort (described earlier). No exclusive FY11 effort. ***FY 2012 Plans:*** (U) All Counter Terrorism Technology activities incorporated into ISR effort (described earlier). No exclusive FY12 effort.	2.110	-	-
Title: Decision Support	2.910	1.723	1.560

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: (U) Demonstrated an integrated multi-source information and knowledge management architecture to provide decision support for military applications. Explored conceptual architectures for the human-machine interface. ***FY 2011 Plans:*** (U) Continue to develop and test knowledge building tools to facilitate decision support for the military. Begin work on Decision Support architectures for Cybersecurity. ***FY 2012 Plans:*** (U) Develop and apply collaborative gameplay technology for multiple mission domains to extend decision support capabilities and develop and demonstrate decision support capabilities for cyber operations.			
Title: Homeland Protection ***FY 2010 Accomplishments:*** (U) Completed a communications and sensor network that supports national response to homeland disasters. Developed and tested advanced video analytics technologies to provide critical infrastructure surveillance. ***FY 2011 Plans:*** (U) Expand the critical infrastructure protection effort to include multi-camera tracking and forensics. Evaluate standoff biometric technologies. Explore small-UAV-based distributed sensing for border protection. ***FY 2012 Plans:*** (U) Incorporate standoff biometric technologies into critical infrastructure protection. Expand border protection activities to demonstration phase.	1.860	1.546	1.727
Title: Technical Initiatives ***FY 2010 Accomplishments:*** (U) Work in biological sciences focused on developing field diagnostics, gene synthesis platforms, and biomarkers for depression. Efforts in cyber security technologies concentrated on building a next-generation cyber warfare test range, developing the concept of an open architecture anti-tamper system, and creating an automated cyber mission risk assessment tool. The autonomous systems (formerly robotics) technologies objectives included demonstrating cooperative interior mapping using two autonomous robots and initiating development of a mobile ground robot capable of acting as a convoy lead. The quantum information science goals included demonstrating long range quantum information transmission and initial development of improved quantum information storage mechanisms. ***FY 2011 Plans:***	5.891	8.613	11.644

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
(U) Biosciences: Evaluate performance of field diagnostic platforms and further develop concept of integrated gene synthesis and sequencing platform. Develop advanced signal processing techniques for biomarker depression and anticipatory monitoring. Cybersecurity: Demonstrate advanced cyber warfare test range and cyber mission risk assessment tools. Demonstrate utility of an open architecture anti-tamper hardware. Demonstrate low-artifact network sensing. Autonomous systems: Demonstrate robot convoy leader functions and begin development of cognitive robot architecture and algorithms. Quantum Information Sciences: Develop several qubit technologies with improved coherence time for quantum information storage and computation. ***FY 2012 Plans:*** (U) Biosciences: Exploit advances in digital microfluidics to create multi-analyte sensing platform. Continue to investigate and develop tools for optical bio-imaging. Cybersecurity: Develop automated mission-relevant cyber risk assessment tools, novel hardware sensors for low-level low-artifact cyber data collection and refrence implementations for cyber testing standards. Continue work on flexible anti-tamper architecture to enable rapid insertion of anti-tamper components into rapid prototypes and other acquisition programs. Autonomous systems: Demonstrate optimized algorithms for distributed robotics networks and model-based autonomy algorithms for higher-level autonomy, and develop the technology underpinnings of a cognitive robotics architecture featuring biomimetic algorithms for true robot autonomy. Quantum Information Sciences: Continue to work on optimization of qubits, with an objective of demonstrating few-qubit basic computational capability.			
Accomplishments/Planned Programs Subtotals	28.061	29.596	31.441

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P535: *Technical Intelligence*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P535: *Technical Intelligence*	3.852	3.234	3.475	-	3.475	3.786	3.804	4.411	4.540	Continuing	Continuing

A. Mission Description and Budget Item Justification

Technical Intelligence supports DDR&E priorities through two primary mechanisms: 1) leveraging the university community through the JASONs (this is not an acronym); and 2) accessing information on the emergence, maturation and development of technology globally.

(U) JASONs is a group of approximately 65 appropriately cleared experts who provide detailed independent technical assessments of challenging technological problems. JASON members are primarily fully tenured professors in physics, mathematics, biosciences, and engineering, disciplines who hold active SCI-level clearances. The outputs of the JASONs annually are studies provided across the leadership and program manager levels which inform and often shape programmatic and technical decisions involving millions of dollars. JASONs were previously funded through university research programs, but their level of technical expertise in systems and development is appropriate for incorporation into Applied Research.

(U) The technical intelligence program will support collaborative work with the U.S. intelligence community on emerging and disruptive technologies, primarily through continued development of Technical Assessment, including Science & Technology (S&T) Net Assessments and Baseline Assessments. These assessments look at sets of technologies from both a domestic and foreign development perspective. The program will also support focused technology and regional trend studies and collaborative work with international partner nations on assessments of emerging and disruptive technologies and their relevance to national defense. The technical intelligence program also supports development of horizon scanning and technology forecasting approaches that enable broader assessment of emerging and disruptive technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Technical Intelligence	3.852	3.234	3.475
FY 2010 Accomplishments: (U) Continued to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies were focused on areas underpinning significant technological challenges in the security environment. For the Technical Intelligence portion some details are classified. The program conducted S&T technical assessments on global technology advancement in collaboration with the National S&T Intelligence Committee in quantum science and others as identified by the S&T net assessment program in FY 2009. This program continued tri-lateral collaboration with the United Kingdom and Australia to target assessments on emerging and disruptive technology and made progress towards including Canada and New Zealand. The program continued work with the National Academy of Sciences (under the National Research Council) through the Board on Global Science and Technology to engage globally on targeted areas of science and technology to understand global shifts and their relevance to national security; the Board is sponsoring several conferences in countries and technologies of interest, with an initial focus on the large data challenge. A future technology war-game was conducted at the National Defense University,			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P535: *Technical Intelligence*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

focused on the potential disruptive impact of rare earth materials. In coordination with the National Intelligence Committee and the Defense Intelligence Community effort to Strengthen Science and Technology Analysis, this program initiated the implementation of a structured enterprise approach to determine, prioritize, track, distribute and evaluate S&T intelligence requirement and generated a report on the health of Defense S&T Intelligence to support the defense S&T program. Country specific reports by the Library of Congress Federal Research Division commissioned in FY 2009 were finalized. Technical Intelligence provided a top tier of S&T Intelligence priorities to the U.S. Intelligence Community and provided a classified mechanism for linking intelligence products to DoD scientists and engineers.

FY 2011 Plans:

(U) Continue to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies will be focused depending on the area most important in the security environment at the time. For the Technical Intelligence portion some details are classified. The program will initiate S&T baseline assessments for the S&T Intelligence priorities and full technical net assessments on global technology advancement in collaboration with the National S&T Intelligence Committee in the areas such as electronic warfare, and others as identified by the S&T net assessment program in FY 2010. This program will continue 'five eyes' collaboration with the United Kingdom, Australia, Canada, and New Zealand to continue assessments on emerging and disruptive technologies and will leverage the best collection of methodologies for scanning/discovery, prioritization and assessment of the military relevance for those emerging technologies. The program will continue the effort of a National Academy of Sciences (under the National Research Council) through the Board of Global Science and Technology to engage globally on targeted areas of science and technology to understand global shifts and their relevance to national security. The Board is sponsoring several conferences in countries in reference to technologies of interest, with the initial focus on the large data challenge. A future technology war-game will be conducted at the National Defense University, focused on the potential disruptive impact of commercially available technologies relevant to an emerging threat. In coordination with the National Intelligence Committee and the Defense Intelligence Community effort to Strengthen Science and Technology Analysis, this program will continue a strong partnership with the intelligence community to provide clear feedback on products, improve articulation of S&T requirements, and define higher impact products for future development. Technical Intelligence will continue to update and refine the S&T Intelligence priorities and mechanisms for increasing information flow from the intelligence community.

FY 2012 Plans:

(U) Continue to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies will be focused depending on the area most important in the security environment at the time. For the Technical Intelligence portion some details are classified. The program will initiate S&T baseline assessments for the S&T Intelligence priorities and full technical net assessments on global technology advancement in collaboration with the National S&T Intelligence Committee in the areas such as electronic warfare, and others as identified by the S&T net assessment program in FY 2010. This program will continue 'five eyes' collaboration with the United Kingdom, Australia, Canada, and New Zealand to continue assessments on

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P535: *Technical Intelligence*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
emerging and disruptive technologies and will leverage the best collection of methodologies for scanning/discovery, prioritization and assessment of the military relevance for those emerging technologies. The program will continue the effort of a National Academy of Sciences (under the National Research Council) through the Board of Global Science and Technology to engage globally on targeted areas of science and technology to understand global shifts and their relevance to national security. The Board is sponsoring several conferences in countries in reference to technologies of interest, with the initial focus on the large data challenge. A future technology war-game will be conducted at the National Defense University, focused on the potential disruptive impact of commercially available technologies relevant to an emerging threat. In coordination with the National Intelligence Committee and the Defense Intelligence Community effort to Strengthen Science and Technology Analysis, this program will continue a strong partnership with the intelligence community to provide clear feedback on products, improve articulation of S&T requirements, and define higher impact products for future development. Technical Intelligence will continue to update and refine the S&T Intelligence priorities and mechanisms for increasing information flow from the intelligence community.			
Accomplishments/Planned Programs Subtotals	3.852	3.234	3.475

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P536: *Testbed for Comparative Analysis*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P536: *Testbed for Comparative Analysis*	-	-	3.000	-	3.000	0.500	0.500	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

(U) The Testbed for Comparative Analysis will include a data, test, and evaluation environment to enable analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy, relevance, and robustness of analysis techniques and algorithms (e.g. cluster analysis) to identify emerging technology trends and potentially disruptive weak signals. The testbed will be developed in collaboration with other interested government agencies with modularity and expansion capabilities in mind.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Testbed for Comparative Analysis	-	-	3.000
Description: (U) The Testbed for Comparative Analysis will include a data, test, and evaluation environment to enable analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy, relevance, and robustness of analysis techniques and algorithms (e.g. cluster analysis) to identify emerging technology trends and potentially disruptive weak signals. The testbed will be developed in collaboration with other interested government agencies with modularity and expansion capabilities in mind. ***FY 2010 Accomplishments:*** N/A - New Project in FY12 ***FY 2011 Plans:*** N/A - New Project in FY12 ***FY 2012 Plans:*** (U) Design and implement an initial data, test, and evaluation environment to enable analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy, relevance, and robustness of analysis techniques and algorithms (e.g. cluster analysis) to identify emerging technology trends and potentially disruptive weak signals. The testbed will be developed in collaboration with other interested government agencies with modularity and expansion capabilities in mind.			
Accomplishments/Planned Programs Subtotals	-	-	3.000

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P536: *Testbed for Comparative Analysis*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

TBD

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602250D8Z: *Systems 2020 Applied Research*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	-	-	4.381	-	4.381	1.951	1.957	-	-	Continuing	Continuing
P209: *Systems 2020 Applied Research*	-	-	4.381	-	4.381	1.951	1.957	-	-	Continuing	Continuing

Note

This is a new start in FY12. The Systems 2020 initiative will set the technical foundation for the Department's system needs for the next decade. This initiative funds OSD and Service research, development and pilot efforts in key technologies and tools for design and development of complex systems. Systems 2020 will enable the Department of Defense to design and build a new class of adaptable systems that allow the warfighter to operate with far greater speed and agility to address changing threats, environments and missions.

Systems 2020 will provide tools, technologies and methods to accelerate delivery of complex adaptive systems to meet the warfighters' changing needs. Systems 2020 applied research will develop and assess the feasibility of proposed solutions to the technology challenges involved in efficient design and development of complex adaptable systems.

A. Mission Description and Budget Item Justification

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	4.381	-	4.381
Total Adjustments	-	-	4.381	-	4.381
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Start	-	-	4.500	-	4.500
• Defense Efficiency - Reports, Studies, Boards and Commissions	-	-	-0.113	-	-0.113
• Economic Assumptions	-	-	-0.006	-	-0.006

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602250D8Z: *Systems 2020 Applied Research*

Change Summary Explanation

This is a new start in FY12. The Systems 2020 initiative will set the technical foundation for the Department's system needs for the next decade. This initiative funds OSD and Service research, development and pilot efforts in key technologies and tools for design and development of complex systems.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602250D8Z: *Systems 2020 Applied Research*	PROJECT P209: *Systems 2020 Applied Research*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P209: *Systems 2020 Applied Research*	-	-	4.381	-	4.381	1.951	1.957	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

This is a new start in FY12. The Systems 2020 initiative will set the technical foundation for the Department's system needs for the next decade. This initiative funds OSD and Service research, development and pilot efforts in key technologies and tools for design and development of complex systems. Systems 2020 will enable the Department of Defense to design and build an entirely new class of adaptable systems that allow the warfighter to operate with far greater speed and agility to address changing threats, environments and missions.

Systems 2020 will provide tools, technologies and methods to accelerate delivery of complex adaptive systems to meet the warfighters' changing needs. Systems 2020 applied research will develop and assess the feasibility of proposed solutions to the technology challenges involved in efficient design and development of complex adaptable systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Systems 2020 Applied Research	-	-	4.381
FY 2010 Accomplishments: N/A			
FY 2011 Plans: N/A			
FY 2012 Plans: -Develop Systems 2020 research agenda, coordinate with the Services' science and technology leadership and the Service's research, development and engineering centers. Coordinate research agenda with outside agencies such as the National Institute of Science and Technology, and the National Science Foundation. -Perform applied research to design, develop and deliver Systems 2020 tools, technology and methods, establishing the initial feasibility of accelerating the delivery of complex adaptable systems. -Perform applied research on systems analysis and design engineering tools to address a wide range of architectures and design drivers in the context of uncertain missions and threats. -Perform applied research into concept engineering and integrated modeling environments to enable rapid assessment of new material approaches and increase the productivity of engineering, design and production processes.			
Accomplishments/Planned Programs Subtotals	-	-	4.381

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	**R-1 ITEM NOMENCLATURE** PE 0602250D8Z: *Systems 2020 Applied Research*	**PROJECT** P209: *Systems 2020 Applied Research*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

TBD

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602663D8Z: *Data to Decisions Applied Research*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	-	3.261	9.235	-	9.235	14.139	14.181	19.135	19.162	Continuing	Continuing
P266: *Data to Decisions Applied Research*	-	3.261	9.235	-	9.235	14.139	14.181	19.135	19.162	Continuing	Continuing

Note

The Joint Data Management program has been restructured in FY 2012 to become an expanded Data-to-Decisions program that addresses additional challenges from the Quadrennial Defense Review and Combatant Commanders. This expanded program builds on the FY 2010 and FY 2011 accomplishments with increased objectives and technology developments critical to on-going operations. This Data-to-Decisions program focuses on information management architecture needs located at the seams between ongoing Service research efforts.

A. Mission Description and Budget Item Justification

A critical element in nearly all defense missions is the Decision Support System, which manages the accumulation of important data and provides tools to help commanders make relevant decisions. These “Data-to-Decision” systems have become increasingly more important as our operations have shifted from large-scale force-on-force engagements to asymmetric conflicts. Terrorists and insurgents are deeply buried within local populations and employ operational concepts that blend in with urban clutter. Subsequently, finding these asymmetric targets has driven an explosion in sensing capabilities and modalities. This exponential growth in sensing volume has so stressed our current technologies that the majority of data now collected is thrown away. Additionally, because the targets are diffuse and rapidly adapt to countermeasures, there has been a rapid proliferation of decision support systems. At last count, the Research & Engineering Database had over 388 references to Decision Support programs.

The goal of this program is to develop an Information Open System Architecture (IOSA) that provides a common platform for rapidly developing and integrating new Data-to-Decisions systems. This IOSA will be based on a canonical decision support architecture and support a physical infrastructure for multi-source data management as well as user-driven innovation tools for analytics. The data management infrastructure will provide easy access and management of current and emergent data sources through plug-and-play modules. Data will be contextualized, indexed, conditioned and intelligently stored with approved formats to allow rapid search and retrieval of tactically relevant data sets. The effort will integrate existing analytics tools, and develop applicable new ones where gaps exist. A library of analytic tools will be built and research into end user programming methods will support new innovation models that mimic commercially successful products. The program consists of both applied research and technology development efforts focused on solving challenge problems each year with spiral developments to a prototype system.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	**R-1 ITEM NOMENCLATURE** PE 0602663D8Z: *Data to Decisions Applied Research*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	4.940	3.261	3.640	-	3.640
Current President's Budget	-	3.261	9.235	-	9.235
Total Adjustments	-4.940	-	5.595	-	5.595
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-4.940	-	6.360	-	6.360
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.751	-	-0.751
• Economic Assumptions	-	-	-0.014	-	-0.014

Change Summary Explanation

Baseline Review. As part of the Department of Defense reform agenda, beginning in FY 2012, this PE has expanded in scope from the original Joint Data Management program. Additional funding of $6.360M has been added to reflect this new direction and work plan to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602663D8Z: *Data to Decisions Applied Research*	PROJECT P266: *Data to Decisions Applied Research*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P266: *Data to Decisions Applied Research*	-	3.261	9.235	-	9.235	14.139	14.181	19.135	19.162	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Joint Data Management Program has been restructured in FY 2012 to become an expanded Data-to-Decision program. This Data-to-Decision program builds on the FY 2010 and FY 2011 accomplishments with increased objectives and technology developments critical to on-going operations. That program had two subtasks as outlined below:

Data Shaping for Exploitation - When tracing the information processing chain from the sensor inputs to the user/analysts, the automated techniques that are known and can be applied become fewer and less mature. The simple information processing chain goes from (1) data tagging and (2) pre-processing to (3) multi-source common data representation to (4) triage/identify high priority data subsets for analysis and action. Candidate research topics to be explored include pattern analysis, data classification for important and prioritization, criticality assessment, change detection, uncertainty management and reduction, high level structures, data search and retrieval, feature extraction, automatic translation, and automated or assisted pattern recognition.

Data Discovery for Exploitation - In order to better discover and exploit the growing amount of sensor data, the following areas of research are considered: object recognition in scenes and streams, discovery and exploitation at the edge, structuring knowledge for discovery, improving analytic throughput, aidingIntelligence, Surveillance and Reconnaissance (ISR) functions, layered analysis and interpretation, effects prediction for decision support, and cross domain access for effective ISR.

These two tasks will be consumed within a new structure in the Data-to-Decisions program. This new program will focus on developing open-architecture technologies for decision support systems to help reduce future development time and cost of data management, analytics and user interface subsystems. The program will use a spiral development model with four-steps. Each year Operational teams will choose a series of cross-service challenge problems dominated by a specific sensing modality. Representative data for each of those problems will then be collected for testing against that problem. A Development team will design algorithms and data management architectures using high-level languages and self test on controlled data sets to address those challenge problems. Independent assessment will occur with sequestered data sets, but each development tool will also be tested against new sensors not included in the self-testing to determine fragility. A Transition team will host the developed algorithms as services in a spiraling prototype system.

The Applied Research program will concentrate on the Development portion of this collaborative effort, while the Advanced Technology Development program focuses on the infrastructure piece, to include the Operational, Assessment and Transition portions. There will be four thrust areas in total, MOVing INTelligence (MOVINT) analytics, Text analytics, IMagery INTelligence (IMINT) analytics and Integration. Work being conducted under the previous two tasks will be consumed within these new tasks and are appropriately described as below.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602663D8Z: *Data to Decisions Applied Research*	PROJECT P266: *Data to Decisions Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: MOVINT Analytics ***Description:*** MOVINT analytics is concerned with developing algorithms to exploit full motion video, Ground Moving Target Indication (GMTI), COMmunications INTelligence (COMINT) and other forms of MOVINT. These algorithms will be implemented in software modules that can be cast as services on a Service-Oriented Architecture. Representative modules include trackers, activity based analytics, behavior detection, start-stop detectors and others. ***FY 2011 Plans:*** The FY 2011 program will develop a tracker and graph analytic module using a consortium with open source development. - Existing proprietary trackers and graph engines will be evaluated and compared against the consortium-led modules to determine best of breed under various operating conditions. - Applied research will be conducted to determine new strategies for building analytics that are extensible across many cross-Service mission areas. ***FY 2012 Plans:*** - MOVINT analytics will continue as trackers are improved and tested against more extended operating conditions and sensor/target combinations. - Research will begin on advanced MOVINT analytics to include algorithms for activity-based analytics, start-stop detection. The Operational team will drive specific module foci based on the missions chosen.	-	2.761	4.638
Title: Text Analytics ***Description:*** Text analytics is a growing field and central to the war on insurgents. They form a fundamental basis for Open Source Intelligence, as well as the means for logging, storing and retrieving important information derived from warfighter interactions with local populations. Text-based analytic algorithms include machine translation, sentiment analysis and gisting, as well as other techniques. ***FY 2011 Plans:*** Understand the state-of-art in machine translation, identify gaps and conduct research to reduce these technical shortfalls ***FY 2012 Plans:*** - Develop polling and sentiment analysis approaches that allow commanders to track and manage interactions in theater. - Research advances in social network discovery and link entity mining tools. Conduct research to close gaps that make these tools useful to battlefield and intelligence needs.	-	0.500	4.597
Accomplishments/Planned Programs Subtotals	-	3.261	9.235

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602663D8Z: *Data to Decisions Applied Research*	PROJECT P266: *Data to Decisions Applied Research*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• BA 3, PE# 0603663D8Z, P366: *Data-to-Decisions Advanced Development*	4.797	5.693	9.235		9.235	14.140	14.181	19.135	19.162	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Security Applied Research*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	-	10.000	9.735	-	9.735	19.519	19.573	9.817	10.105	Continuing	Continuing
P003: *Cyber Security Applied Research*	-	10.000	9.735	-	9.735	19.519	19.573	9.817	10.105	Continuing	Continuing

A. Mission Description and Budget Item Justification

Our military forces require resilient, reliable networks to conduct effective operations. However, the number and sophistication of threats in cyberspace are rapidly growing, making it urgent and critical to improve the cyber security of Department of Defense (DoD) networks to counter those threats and assure our missions. This program will focus on innovative and sustained research in both cyber security and computer network operations to develop new concepts to harden key network components, increase the military's ability to fight and survive during cyber attacks, disrupt nation-state level attack planning and execution, measure the state of cyber security, and explore and exploit new ideas in cyber warfare.

The Cyber Security Applied Research program element is budgeted in the applied research budget activity because it emphasizes an approach to develop new cyber security paradigms to change the cyber game to build a more resilient and trustworthy cyberspace. These approaches will include changing the defensive terrain of our existing digital infrastructure and identifying ways to raise the risk and lower the value of attack from an advanced, persistent cyber threat. The Cyber Security Applied Research program will build on the existing basic and applied research results and transition new successful applied research results to the Cyber Security Advanced Technology Development program element (0603668D8Z).

This Defense-wide program element will address advanced persistent threats to fill DoD science and technology (S&T) gaps identified in key reports and studies conducted by DDR&E over the past year.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	**R-1 ITEM NOMENCLATURE** PE 0602668D8Z: *Cyber Security Applied Research*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	10.000	10.000	-	10.000
Current President's Budget	-	10.000	9.735	-	9.735
Total Adjustments	-	-	-0.265	-	-0.265
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.251	-	-0.251
• Economic Assumptions	-	-	-0.014	-	-0.014

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Security Applied Research*	PROJECT P003: *Cyber Security Applied Research*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P003: *Cyber Security Applied Research*	-	10.000	9.735	-	9.735	19.519	19.573	9.817	10.105	Continuing	Continuing

A. Mission Description and Budget Item Justification

The program will develop technology options through the DoD S&T organizations within and across the following technical areas:

Information Assurance / Computer Network Defense (IA/CND) – Develop technologies to harden DoD network components; improve understanding of cyber threat and the mitigation of the threat; and enable systems to operate through cyber attacks in degraded environments.

Computer Network Operations (CNO) – Disrupt adversary attack planning and execution; explore game-changing ideas over the full spectrum of CNO and new concepts in cyber warfare; increase collaboration between disparate research communities within CNO; and address identified gaps in DoD CNO S&T to prepare for cyber conflict against advanced persistent threats.

Cyber Security Metrics – Explore new analytical methodologies, models, and experimental data sets to establish metrics to measure a system's state of security; and apply the scientific method to establish the foundations of a scientific framework in which cyber security research can be conducted to test hypothesis with measurable, repeatable results.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Cyber Security Applied Research	-	10.000	9.735
Description: Project plans for FY2011 and beyond will be developed by the Office of the Director, Defense Research & Engineering (DDR&E) for execution by the DoD S&T organizations. This process will be conducted using the established Information Assurance and Cyber Security (IA/CS) Science & Technology and Computer Network Operations (CNO) Science & Technology Steering Councils chartered by DDR&E. The Cyber Security Applied Research program will build on the existing basic and applied research results and transition new successful applied research results to the Cyber Security Advanced Technology Development program element. The link between the Cyber Security Applied Research and Cyber Security Advanced Technology Development program elements is intended to create a mechanism to take existing basic research results and mature them to the point of incorporation into technology demonstrations.			
FY 2011 Plans: Initiate research activities in the candidate focuses within each technical area. Establish performance metrics for candidate performers. Evaluate results.			
Candidate focuses of each technical area:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Security Applied Research*	PROJECT P003: *Cyber Security Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Information Assurance / Computer Network Defense (IA/CND): -Harden critical points in the security architecture. -Reduce, rapidly and autonomously detect, and mitigate attack effects. -Reduce cyber reaction time for rapid system reconstitution to a known secure state. -Enable critical mission operation through cyber attacks in degraded environments. Computer Network Operations (CNO): -Improve understanding of the adversarial threat. -Increase adversary risk and work factor to decrease effectiveness during attack and exploitation attempts. -Disrupt and confuse adversarial attack planning cycles. Cyber Security Metrics -Measure effectiveness of existing countermeasures and the current level of DoD cyber security. -Measure impacts of new cyber security technologies. -Measure computer and network assurance levels for enhanced situational awareness. ***FY 2012 Plans:*** Continue research activities in each technical area began in FY 2011. Evaluate results.			
Accomplishments/Planned Programs Subtotals	-	10.000	9.735

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Specific programmatic performance metrics are listed above in the program plans section.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602670D8Z: *Human Social Culture Behavior (HSCB) Modeling Applied Research*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	7.639	9.499	14.923	-	14.923	17.057	17.432	17.821	18.359	Continuing	Continuing
P270: *Human Social Culture Behavior (HSCB) Modeling Applied Research*	7.639	9.499	14.923	-	14.923	17.057	17.432	17.821	18.359	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Human Social Culture Behavior (HSCB) Modeling Program is a vertically integrated effort to research, develop, and transition technologies, tools, and systems to programs of record and users in need. Under three integrated program elements (PEs), the Program will conduct applied research, mature and demonstrate advanced technology, and develop transition-ready components and prototypes. The Program will create software tools that will help intelligence analysts, operations analysts, operations planners, and wargamers represent, understand, and forecast socio-cultural behavior at the strategic, operational and tactical levels. Work under PE 0602670D8Z will focus on developing an applied science base and general-use, cross-domain capabilities/tools to support the HSCB application domains of analysis, operational planning, training, and operations experimentation (wargaming). Research will address needs in four areas: modeling, visualization, training, and data. It will: develop and validate theoretical constructions, generate knowledge products, and develop stand-alone computational models of socio-cultural behavior; develop methods for visualizing socio-cultural behavior variables and their associated complexity and uncertainty; identify cultural competencies indexed to warfighter tasking and develop methods for flexible training of socio-cultural knowledge, skills, and abilities at tactical and operational levels; and develop improved methods for valid collection of quality socio-cultural data that will facilitate subsequent model development and validation.

Human behavior based theory, knowledge products, and stand-alone models will support development of software to help users represent, understand, and forecast socio-cultural behavior at strategic, operational, and tactical levels.

Visualization methods will support rapid assessment of the human activity environments, social, cultural, behavioral at strategic to tactical levels.

Socio-cultural competencies and training methods will enable development of software tools that can support agile, efficient delivery of innovative and high impact training.

Improved data collection methods will help build the socio-cultural science base and facilitate subsequent model development and validation.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	**R-1 ITEM NOMENCLATURE** PE 0602670D8Z: *Human Social Culture Behavior (HSCB) Modeling Applied Research*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	7.882	9.499	15.843	-	15.843
Current President's Budget	7.639	9.499	14.923	-	14.923
Total Adjustments	-0.243	-	-0.920	-	-0.920
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.028	-			
• SBIR/STTR Transfer	-0.203	-			
• Other Internal Adjustments	-0.012	-	-	-	-
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.898	-	-0.898
• Economic Assumptions	-	-	-0.022	-	-0.022

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Economic Assumptions: $0.022 M

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602670D8Z: *Human Social Culture Behavior (HSCB) Modeling Applied Research*	PROJECT P270: *Human Social Culture Behavior (HSCB) Modeling Applied Research*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P270: *Human Social Culture Behavior (HSCB) Modeling Applied Research*	7.639	9.499	14.923	-	14.923	17.057	17.432	17.821	18.359	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Human Social Culture Behavior (HSCB) Modeling Program is a vertically integrated effort to research, develop, and transition technologies, tools, and systems to programs of record and users in need. In three integrated program elements (PEs), the Program will conduct applied research, mature and demonstrate advanced technology, and develop transition-ready components and prototypes. The Program will create software tools that will help intelligence analysts, operations analysts, operations planners, and wargamers represent, understand, and forecast socio-cultural behavior at the strategic, operational and tactical levels. Work under PE 0602670D8Z will focus on developing an applied science base and general-use, cross-domain capabilities/tools to support the HSCB application domains of analysis, operational planning, training, and operations experimentation (wargaming). Research will address needs in four areas: modeling, visualization, training, and data. It will: develop and validate theoretical constructions, generate knowledge products, and develop stand-alone computational models of socio-cultural behavior; develop methods for visualizing socio-cultural behavior variables and their associated complexity and uncertainty; identify cultural competencies indexed to warfighter tasking and develop methods for flexible training of socio-cultural knowledge, skills, and abilities at tactical and operational levels; and develop improved methods for valid collection of quality socio-cultural data that will facilitate subsequent model development and validation.

Human behavior based theory, knowledge products, and stand-alone models will support development of software to help users represent, understand, and forecast socio-cultural behavior at strategic, operational, and tactical levels.

Visualization methods will support rapid assessment of the human activity environments, social, cultural, behavioral at strategic to tactical levels.

Socio-cultural competencies and training methods will enable development of software tools that can support agile, efficient delivery of innovative and high impact training.

Improved data collection methods will help build the socio-cultural science base and facilitate subsequent model development and validation.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Human Behavior Based Theory and Model Development	2.679	3.028	5.265
Description: Conduct the research necessary to develop and refine theoretical constructs and validate them using empirical data. Develop knowledge products (including conceptual models, decision frameworks, ontologies, databases) that will support computational modeling of socio-cultural behavior. Apply validation techniques across the spectrum of applications (Intelligence, Influence Operations, Planning) to quantitative models of socio-cultural factors in coalition warfare and socio-cultural factors of			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602670D8Z: *Human Social Culture Behavior (HSCB) Modeling Applied Research*	PROJECT P270: *Human Social Culture Behavior (HSCB) Modeling Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
military significance for emerging conflicts. Develop stand-alone models that instantiate social science theoretical constructs to address mission-specific needs. Develop a human behavior modeling framework that is independent of specific socio-cultural values, attitudes and beliefs. ***FY 2010 Accomplishments:*** Developed data, methods and models for representing extremist and insurgent communication as it relates to decision making and behavior (Arizona State University and University of Washington/Applied Physics Laboratory). Developed online game infrastructure that functions as a testbed for social and behavioral models. Tested models of how agents think and models of how networks of agents grow and evolve (University of Southern California). Developed and tested service-oriented architecture (SOA) for modeling and analysis (Carnegie Mellon University). Delivered V1.0 agent-based model for simulating the behavior of participants in Afghan opium markets (Los Alamos National Labs). Completed models that simulate evolution of multigame strategies of state and sub-state actors for one of three test scenarios (University of Chicago). Completed model framework and concept of operations for tool designed to estimate effects of coordinated U.S. Government and (USG) and Non-Governmental Organization (NGO) efforts (eCross Culture). Created initial model to test discrimination of extremist/moderates in psychological terms in five distinct dimensions (ARA Klein). Developed technical approach to transition emerging 6.2 technology and intellectual capital to warfighter. ***FY 2011 Plans:*** Research and develop methods and models to understand, forecast, and assist analysts and planners to mitigate the spread of violent extremism. Continue application of hybrid modeling environments where hybrid means using a combination of the major modeling modalities (systems dynamics, game theoretic and agent). Continue to develop the theory to support hybrid, generalizable models across the spectrum from tactical to operational to strategic levels. Continue to research the effectiveness of generalizable models at the tactical, operational and strategic levels and determine the data fidelity requirements for each level of modeling. ***FY 2012 Plans:*** Deliver and test models that can assist in countering violent extremism. Develop methods and data for conducting audience analysis in support of influence operations and strategic communication actions. Support the rapid creation of culturally aware, audience specific messages. Provide methods to measure changes in population sentiment across short periods of time and sectors of society that can be done by U.S. forces. Demonstrate links from sentiment to attitudes and behavior.			
Title: Visualization Methods ***Description:*** Develop common categorization of meta-information (i.e., the data source and pedigree, what types of uncertainty are associated with it, how old is the data, etc.) in existing visualization tools/decision aiding systems. Develop methods for	1.912	2.930	3.715

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602670D8Z: *Human Social Culture Behavior (HSCB) Modeling Applied Research*	PROJECT P270: *Human Social Culture Behavior (HSCB) Modeling Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
visually and digitally depicting the incomplete, subjective, volatile, and/or imprecise nature of cultural information to support manual and automated analysis. ***FY 2010 Accomplishments:*** Delivered V1.0 interface for visualizing dynamics of Afghan opium markets (Los Alamos National Labs). Developed and tested SOA architecture for modeling and analysis with interface that supports visualization of model configuration and workflow (Carnegie Mellon University). Developed methods for geospatial display of state level strategic actions as they evolve over time (University of Chicago). ***FY 2011 Plans:*** Continue development of visualization infrastructure that displays hybrid data sources. Expected focus will include research of visualization capability that will provide end-to-end support for commanders at all levels for operational planning and effects assessment. ***FY 2012 Plans:*** Research methods and techniques for visualization that focus on the most challenging issues of socio-cultural data, including sparseness, volatility, validity, complexity, and uncertainty. Work should produce approaches that will help model users recognize and adjust for these issues.			
Title: Socio-Cultural Competencies and Training Methods ***Description:*** Tactical, Operational and Strategic level non-kinetic actions can be a large force multiplier. This work will develop technologies, models, and skills training to focus on the insertion of technologies to support COCOM and operational level training for planners who will need to integrate socio-cultural factors into operational planning (allowing for the planning, software execution, and rehearsal of certain non-kinetic operations). Develop conceptual model for socio-cultural training of military personnel, including specification of competencies focused on relevant operational scenarios. Develop methods that can use flexible underlying cultural models for training at the operational/tactical level. ***FY 2010 Accomplishments:*** Studies conducted on cross-cultural competencies required to meet specific military domain requirements (Army Research Institute (ARI)). Completed cognitive task analysis and design of a system for cultural training of junior officers and non-commissioned officers (361 Interactive). Conducted “Developing Intercultural Adaptability in the Warfighter”, a two-day workshop focused on cultural education and training held 4-5 November 2009 in Orlando, Florida. The workshop was co-sponsored by the Office of the Secretary of Defense (OSD) HSCB Modeling Program, the Office of Naval Research (ONR), the Combating	1.525	1.771	2.972

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602670D8Z: *Human Social Culture Behavior (HSCB) Modeling Applied Research*	PROJECT P270: *Human Social Culture Behavior (HSCB) Modeling Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Terrorism Technical Support Office (CTTSO), and the U.S. ARI. The goals of the workshop were to differentiate capability needs and training methods and for attendees to share information. ***FY 2011 Plans:*** Determine critical cultural knowledge skills, tailored to Military Occupation Specialties. The FY 2011 program will identify remaining education/training gaps and research tools and techniques for filling them. Expected focus will include leveraging serious gaming techniques for virtual training and mission rehearsal. ***FY 2012 Plans:*** Conduct research on optimal training delivery methods, including research on methods for accelerated development of training for new regions. Consider which training methodologies are most effective given the knowledge skills and abilities that must be learned. Develop techniques for virtual training of culture-specific skills and basic interpersonal interactions. Research methods for accelerating development of training content for new regions/cultures, cost-effective ways and while maintaining content validity/accuracy.			
Title: Data Collection Methods ***Description:*** Develop scientifically validated strategies to collect cultural and societal information in denied or difficult to penetrate areas. Develop hand-held/portable tools to collect cultural and societal information. Develop methodologies and supporting technologies capable of extracting relevant data into databases for further modeling to support denied, restricted, or unavailable area socio-cultural data. Develop technologies capable of leveraging extracted data (e.g. from surveys), and processing and validating it. Develop methods and supporting technologies in which data can be ascribed a measure of veracity and with evidentiary value such that the data is broadly useful as it perpetuates throughout the system. Examine the use of general use metadata technologies for multipurpose/multimodal applications. ***FY 2010 Accomplishments:*** Developed instrument to collect data on penetration of Western values in seven Mideast nations (Eastern Michigan University). Have developed initial tool set for collecting data and performing sentiment analysis on virtual communities to investigate propagation patterns and influence patterns (University of Hawaii). Designed a data framework for discourse mining to support simulation of multigame strategic interactions (University of Chicago). Developed tools for harvesting social media content (Lockheed Martin). Developed ontology for ethnographic data collection for use in computational modeling (Penn State University). ***FY 2011 Plans:*** Integrate tools/models into SOA architecture. Research novel methods for accurate, non-polling collection of data on sentiment, beliefs, opinions. Continue to mature technologies capable of extracting relevant data into databases to support socio-cultural	1.523	1.770	2.971

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602670D8Z: *Human Social Culture Behavior (HSCB) Modeling Applied Research*	PROJECT P270: *Human Social Culture Behavior (HSCB) Modeling Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
modeling. Continue development of technologies capable of leveraging extracted data (e.g. from surveys), and processing and validating it. ***FY 2012 Plans:*** Test and demonstrate flexible, data-to-model service oriented architecture using multi-sourced datasets. Research and develop an HSCB data collection, analysis and interpretation capability for small units (e.g. platoons, squads). Develop methods and approaches to collect and validate information on denied environments, with particular focus on social media. Research is required on how representative this information is about a society or social group.			
Accomplishments/Planned Programs Subtotals	7.639	9.499	14.923

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• PE 0603670D8Z BA 3 : *HSCB Advanced Development*	9.761	10.834	18.101		18.101	20.743	21.150	21.603	22.252	Continuing	Continuing
• PE 0604670D8Z BA 4 : *HSCB Research and Engineering*	6.295	6.845	10.272		10.272	12.926	13.180	13.440	13.878	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	13.427	20.556	24.771	-	24.771	27.458	28.219	31.436	32.385	Continuing	Continuing
P002: *Insensitive Munitions Advanced Technology*	13.427	17.034	19.720	-	19.720	21.360	21.384	23.086	23.779	Continuing	Continuing
P301: *Enabling Fuze Advanced Technology*	-	3.522	5.051	-	5.051	6.098	6.835	8.350	8.606	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program addresses advanced technology development associated with improving the lethality, reliability, safety and survivability of munitions and weapon systems. The goal is to develop and demonstrate joint enabling technologies that can be used by program managers as they develop their specific weapon programs. The program invests in and demonstrates technologies from a Joint Service perspective, thus insuring the development of technology with the broadest applicability while avoiding duplication of efforts.

Munition Area Technology Groups (MATGs) and Fuze Area Technology Groups (FATGs) have been established for each munition and capability area and are tasked with 1) coordinating, establishing, and maintaining five, ten, and fifteen-year technology development plans and roadmaps, 2) coordinating biannual meetings to review technical and programmatic details of each funded and proposed effort, 3) developing and submitting Technology Transition Agreements in coordination with appropriate Program Executive Offices (PEO) for insertion in their Insensitive Munition (IM) Strategic Plans / Fuze Technology Development Plan, and 4) interfacing with other MATGs / FATGs and IM / fuze science and technology projects as appropriate. The Joint Insensitive Munitions Technical Program (JIMTP) and Joint Fuze Technical Program (JFTP) will utilize a Technical Advisory Committee (TAC) (consisting of senior DoD and DOE laboratory representatives and senior Munitions PEO representatives) to provide program oversight, policy, direction and priorities during its annual meeting.

The Insensitive Munitions effort will demonstrate enabling technologies needed to develop weapons in compliance with Insensitive Munitions requirements established in United States Code, Title 10, Chapter 141, Section 2389 and DoDI 5000.1. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority munitions identified in the PEO IM Strategic Plans. Mature demonstrated IM technology can be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other non-compliant munitions within their portfolios.

Under the JIMTP, investments are focused on five Munition Areas: High Performance Rocket Propulsion, Minimum Signature Rocket Propulsion, Blast and Fragmentation Warheads, Anti-Armor Warheads, and Large Caliber Gun Propulsion. Munition Area Technology Groups, under tri-service leadership, have developed technology roadmaps for each Munition Area which are used to guide investments based on goals consistent with the DoD IM Strategic Plan. These IM technologies, alone or in combination, will be incorporated in hardware, simulating real-world munitions, to demonstrate their utility and feasibility as part of Technology Transition Agreements with PEOs.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*

The Enabling Fuze Advanced Technology effort will also demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the Guidance for Development (GDF) of the Force, the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority capabilities and technology needs identified and validated by the PEOs and the Heads of the Service Science and Technology (S&T) communities. In this way, promising multi-point initiation architectures, high reliability fuze architectures, survivable components, modular fuze packaging, and components produced based on ease of manufacturing can be integrated into a munition configuration and its ability to address required capability needs can be validated. Mature fuze technology can be transitioned, thereby decreasing program costs and schedule risk and facilitating their spin-off into other munitions within their portfolios.

Under the JFTP, investments are focused on specific capability areas that have been identified by Department strategic guidance and current shortfalls in weapon systems and will be validated by the PEOs and the Heads of the Service S&T communities. These four capability areas are: 1) Hard Target Survivable Fuzing, 2) Tailorable Effects Weapon Fuzing, 3) High Reliability Fuzing, 4) and Enabling Fuze Technologies and Common Architecture.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	23.538	20.556	27.045	-	27.045
Current President's Budget	13.427	20.556	24.771	-	24.771
Total Adjustments	-10.111	-	-2.274	-	-2.274
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.087	-			
• Other Program Adjustments	-10.024	-	-	-	-
• Defense Efficiency - Baseline Review	-	-	-1.600	-	-1.600
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.639	-	-0.639
• Economic Assumptions	-	-	-0.035	-	-0.035

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P002: *Insensitive Munitions Advanced Technology*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P002: *Insensitive Munitions Advanced Technology*	13.427	17.034	19.720	-	19.720	21.360	21.384	23.086	23.779	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program addresses advanced technology development associated with improving the lethality, reliability, safety and survivability of munitions and weapon systems. The goal is to develop and demonstrate joint enabling technologies that can be used by program managers as they develop their specific weapon programs. The program invests in and demonstrates technologies from a Joint Service perspective, thus insuring the development of technology with the broadest applicability while avoiding duplication of efforts.

This effort will demonstrate enabling technologies needed to develop weapons in compliance with Insensitive Munitions requirements established in United States Code, Title 10, Chapter 141, Section 2389 and DoDI 5000.1. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority munitions identified in the PEO IM Strategic Plans. Mature demonstrated IM technology can be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other non-compliant munitions within their portfolios.

The Joint Insensitive Munitions Technology Program, investments are focused on five Munition Areas: High Performance Rocket Propulsion, Minimum Signature Rocket Propulsion, Blast and Fragmentation Warheads, Anti-Armor Warheads, and Large Caliber Gun Propulsion. Munition Area Technology Groups, under tri-service leadership, have developed technology roadmaps for each Munition Area which is used to guide investments based on goals consistent with the DoD IM Strategic Plan. These IM technologies, alone or in combination, will be incorporated in hardware, simulating real-world munitions, to demonstrate their utility and feasibility as part of Technology Transition Agreements with PEOs.

This effort will also demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the GDF, the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority capabilities and technology needs identified and validated by the PEOs and the Heads of the Service Science and Technology (S&T) communities. In this way, promising multi-point initiation architectures, high reliability fuze architectures, survivable components, modular fuze packaging, and components produced based on ease of manufacturing can be integrated into a munition configuration and its ability to address required capability needs can be validated. Mature fuze technology can be transitioned, thereby decreasing program costs and schedule risk and facilitating their spin-off into other munitions within their portfolios.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: High Performance Rocket Propulsion	3.191	3.228	4.013
Description: High Performance Rocket Propulsion is focused on the development and demonstration of technologies to improve the IM response of High Performance Propulsion (HPP) systems (rocket motors with Ammonium Perchlorate and with or without			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P002: *Insensitive Munitions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
a metal fuel) for rockets and missiles launched from air, ground and sea platforms. These technologies, when applied to rocket motors, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Operating conditions may be controlled or widely varying in both temperature and vibration. Technologies include, but are not limited to, rocket propellant ingredients (including synthesis, characterization and scale-up), reduced smoke or smokey propellants (including formulation, characterization and scale-up), rocket motor case design, materials for active and passive thermal mitigation, shock mitigation materials and techniques, passive and active coatings, active and passive venting techniques for motor cases or containers, ignition systems, sensors and thrust mitigation techniques. The 5-10-15 year goals of the HPP MATG are concentrated on solving the IM response of missile propulsions systems due to Fragment Impacts and Slow Cookoff for the majority of High Performance Propulsion rocket motors, and solving the Fast Cookoff response of very large High Performance Propulsion motors. ***FY 2010 Accomplishments:*** -Down-selected resins for composite case and manufactured rocket motor cases with venting technology in minimum signature and high-performance 5-10-inch class motors. Conducted static test of baseline propellant, plus bullet and fragment impact, and fast and slow cookoff tests with alternate propellant. -Scaled up high-performance composite propellant to 150-gal batch, and successfully processed in redundant 30 gal quantities. Conducted sub-scale IM demonstration in 8-inch composite rocket motors and subjected them to standard IM tests. Manufacturing large cases for future tests. ***FY 2011 Plans:*** -Conduct aging study and full scale IM demonstration tests on 21 inch new propellant filled rocket cases. Conduct 70 pound BATES motor static test firing to demonstrate propellant performance. Transition to Navy Insensitive Munitions Technology Transition Program. -Set for High length over diameter Steel Case Rocket Motors – Refine and integrate novel rocket motor design; fabricate motors and conduct IM testing to include bullet and fragment impact, and fast and slow cookoff. Transition to Navy Future Naval Capabilities. ***FY 2012 Plans:*** -Conduct full scale motor static tests of IM propellants. Demonstrate reduced sensitivity minimum signature propellant IM and ballistic properties in full scale test and transition to the 6.4 Insensitive Munition Technology Transition Program. -Conduct large motor IM demonstration.			
Title: Minimum Signature Rocket Propulsion	2.814	3.726	4.409

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P002: *Insensitive Munitions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Minimum Signature Rocket Propulsion is focused on the development and demonstration of technologies to improve the IM response of Minimum Signature Rocket Propulsion Technologies. The development and demonstration of minimum signature (MS) rocket technologies, that when applied to munition systems, will improve munition IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Topics include but are not limited to MS rocket propellant formulations, ingredients for MS propellant formulations (including synthesis, characterization and scale-up), case and packaging design, active and passive venting techniques, rocket motor case design, ignition systems and thrust mitigation techniques. Of particular interest are technologies toward higher burning rate MS propellants with state-of-the-art energy and reduced shock sensitivity. The 5-10-15 year goals of the Minimum Signature Propulsion MATG are concentrated on solving the IM response of missile propulsion systems due to Fragment Impact, Slow Cook-Off, and Shaped Charge Jet threats. ***FY 2010 Accomplishments:*** -Conducted performance testing of two minimum signature propellant candidates in small scale and full scale tests for direct comparison with baseline propellant. ***FY 2011 Plans:*** -Conduct IM tests on composite and metal case motors using baseline propellant to benchmark composite case benefits. Conduct slow cookoff and fragment impact reliability testing of motor designs. -Prepare, load, and conduct aging and IM tests on propellant candidates in metal and composite cases, for direct comparison with baseline propellants. -Characterize the propellants and adapt design concepts for end-vent mechanisms to conduct slow cookoff testing. -Conduct aging and environmental tests of rocket motor thermal ring venting mechanism on live rocket motor assets. ***FY 2012 Plans:*** -Manufacture test motor hardware and conduct propellant down-select testing. -Demonstrate shaped memory cook-off solutions for minimum signature propellant in analog motors. -Modify containers with venting system and conduct fast and slow cookoff tests using inert as well as live rocket motors modified with the case venting mechanism to determine benefits of both systems.			
Title: Blast and Fragmentation Warheads ***Description:*** Blast and Fragmentation Warheads - Focused on the development and demonstration of technologies to improve the IM response of Blast / Fragmentation munitions. The development and demonstration of explosive ingredients, explosives and warhead and fuze technologies that, when applied to munitions, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance are of particular interest. Munition	5.154	6.956	6.983

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P002: *Insensitive Munitions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
operating conditions may be controlled or have widely varying environmental conditions, such as temperature and vibration, and other factors such as cost, availability, reliability may be critically important depending on the intended munition application. Applications vary but include high performance warhead fills, booster explosives, bulk demolition charges, and bulk fills for blast and/or fragmentation charges. Technologies include but are not limited to new ingredient synthesis and characterization, initial formulation development, scale-up, warhead/charge configuration, venting techniques for both munitions and their containers, protection / packaging materials and systems, shock mitigation liners, initiation devices, techniques, and technologies. The 5-10-15 year goals of the Blast and Fragmentation Warhead MATG are concentrated on solving the IM response of blast fragment warheads to the Sympathetic Detonation, Fast Cookoff and Shaped Charge Jet threats. ***FY 2010 Accomplishments:*** -Down selected explosive fill and liner materials. Completed full-scale liner environmental tests and readied assets for initial IM and performance tests of reactive liner in full-scale 500-lb bomb. Conducted series of full-scale environmental tests (thermal cycling, vibration, and drop tests) with the reactive liner and an inert fill. Tests were used to determine the effects that these types of environments have on items using liners, to ensure that the liner did not flow, shift or crack. -Down-selected formulation candidates and conducted IM tests using various manufacturing methods, comparing results to current fielded munitions. -Began demonstration of new initiation system for very insensitive main charge explosive fills. ***FY 2011 Plans:*** -Complete demonstration of low-sensitivity main-charge fill to prevent sympathetic detonation in 500-lb and greater bombs. Conduct full scale IM and performance tests. -Begin integrated demonstration of new initiation system with less-sensitive explosive fills. -Scale-up and manufacture explosive booster material in 30-40 pound batches to conduct pressing study and prepare pellets for testing. Conduct characterization tests to ensure purity and particle size of materials. -Perform high explosive testing to compare subject materials against baseline bomb fill materials. Use sympathetic reaction models to assess new IHE fills and select appropriate formulation for refinement. -Prepare and conduct sub-scale performance testing using candidate formulations to compare to baseline fills. ***FY 2012 Plans:*** -Complete initiation system environmental survivability testing, full scale initiation system tests and feasibility test, transitioning to a program of record. -Conduct environmental and IM tests to include full scale slow cookoff test in a 1000 pound warhead. -Conduct formulation refinements and subscale IM tests. Prepare assets for full-scale IM tests.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P002: *Insensitive Munitions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Integrate initiation designs with explosive fill candidate and conduct small-scale tests as well as full Bucket Test series.			
Title: Anti-Armor Warheads	1.775	1.579	2.237
Description: Anti-Armor Warheads is focused on the development and demonstration of explosive ingredients, explosives, warhead and fuze technologies for improving IM of Anti-Armor Warhead (AAW) munitions. The development of explosive ingredients, explosives and warhead and fuze technologies that, when applied to munitions, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Munition operating conditions may be controlled or have widely varying environmental conditions, such as temperature and vibration, and other factors such as cost, availability, reliability may be critically important depending on the intended munition application. Applications vary but include high performance warhead fills, booster explosives, and all other technology to mitigate the violent response of Anti-Armor Warhead munitions to IM threats. Technologies include but are not limited to new ingredient synthesis and characterization, initial formulation development, scale-up, warhead/charge configuration, venting techniques for both munitions and their containers, protection / packaging materials and systems, shock mitigation liners, initiation devices, techniques, and technologies. The 5-10-15 year goals of the AAW MATG are concentrated on solving the IM response of anti-armor warheads to the Fragment Impact and Slow Cookoff threats and a 5 year goal of solving Sympathetic Detonation threats, with a 10-15 year goal of resolving the IM response to the Shaped Charge Jet threat.			
FY 2010 Accomplishments: -Demonstrated IM characteristics with no degradation in performance with liner venting and fragment impact mitigation sleeve technology on anti-armor missile warhead. Completed venting modeling and simulation work, for fast and slow cook-off, as well as fragment impact testing on Navy warhead. -Conducted Army warhead particle impact mitigation sleeve concept design and testing, ensuring no impact on warhead effectiveness.			
FY 2011 Plans: -Evaluation of Comp B replacement explosive and barriers in 40 pound shaped charge – Conduct modeling and simulation on candidate barrier materials and down-select. Conduct IM and performance tests to validate performance and finalize recommended solutions for transition to a program of record. -AAW IM Technology Integrated Demonstration & Transition – Integrate design and test hardware selection. Load large and small warheads and conduct fragment and bullet impact and fast and slow cookoff tests using selected explosives.			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P002: *Insensitive Munitions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Optimize designs based upon small and large warhead tests; fabricate optimized design, and conduct engineering and penetration testing.			
Title: Large Caliber Gun Propulsion	0.493	1.545	2.078
Description: Large Caliber Gun Propulsion (LCGP) is focused on the development and demonstration of technologies in the area of Gun Propulsion Technologies. The development and demonstration of gun propulsion technologies, that when applied to munition systems, will improve munition IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Topics include but are not limited to gun propellant formulations, ingredients for gun propellant formulations (including synthesis, characterization and scale-up), cartridge case and packaging design, active and passive venting techniques, reduced sensitivity primer propellant and primer systems and robust primers for insensitive propellants. Applications vary, but include both large and medium caliber munitions. Operating requirements vary, and other factors such as barrel life and operation over varying environmental conditions may be critically important depending on the intended munition application. The 5-10-15 year goals of the LCGP MATG are concentrated on solving the IM response of gun propulsion munitions to Fragment Impact, Shaped Charge Jet, and Slow Cookoff threats. ***FY 2010 Accomplishments:*** -Optimized propellant formulations and conducted initial safety tests using new propellant formulation. ***FY 2011 Plans:*** -Optimize and manufacture primer and conduct aging studies. Conduct propellant initial IM and gun testing with full scale representative articles. ***FY 2012 Plans:*** -Conduct final IM testing of propellant and primer optimization formulations less sensitive to fragment impact, shaped charge jet impacts and slow cookoff.			
Accomplishments/Planned Programs Subtotals	13.427	17.034	19.720

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P002: *Insensitive Munitions Advanced Technology*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0602000D8Z P000: *BA2 Insensitive Munitions*	14.990	14.392	14.334		14.334	14.661	14.916	15.246	15.696	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

1) Transitions of technologies developed by the Program are tracked and documented using DoD/NASA Technical Readiness Level (TRL) scale.
2) MATG Technology Roadmaps are prepared, evaluated, and analyzed by JIMTP management and technical staff.
3) Chairman's Annual Assessments for each MATG are critically reviewed by the TAC to determine progress, transition plans, and relevance of each project.
4) Project progress toward goals and milestones is assessed at each MATG meeting.
5) Annual technical reports and papers are tracked and documented for the Program.
6) External Peer Review of Projects conducted as part of Joint Army/Navy/NASA/Air Force meetings.
7) Technology Transition Agreements in place with Munition programs.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P301: *Enabling Fuze Advanced Technology*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P301: *Enabling Fuze Advanced Technology*	-	3.522	5.051	-	5.051	6.098	6.835	8.350	8.606	Continuing	Continuing

A. Mission Description and Budget Item Justification

This effort will demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the Guidance for Development of the Force, the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will take promising technologies integrated and tested to technology readiness level (TRL) five and demonstrate the technologies to a TRL-6 utilizing weapon hardware based on priority capabilities and technology needs identified and validated by the Program Executive Officers (PEOs) and the Heads of the Service S&T communities. Mature demonstrated fuze technology will be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other munitions within their portfolios.

Under the Joint Fuze Technology Program (JFTP), investments are focused on specific capability areas that have been identified by Department strategic guidance and current shortfalls in weapon systems and validated by the PEOs and Heads of the Service S&T communities. These four capability areas are: 1) Hard Target Survivable Fuzing, 2) Tailorable Effects (TE) Weapon Fuzing, 3) High Reliability Fuzing, 4) and Enabling Fuze Technologies and Common Architecture.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Hard Target Fuzing	-	0.690	1.325
Description: The Hard Target Fuzing challenges are grouped into three Technology Areas. Improved modeling and simulation capabilities provide the validated computational tools necessary for hard target applications. Basic Phenomenology & Understanding of the Fuze Environment is the science-based endeavor of providing the test equipment, instrumentation, and analysis techniques for experimentation and data gathering necessary for Hardware Development - Next Generation Fuzing. This technology area aims to increase the effectiveness of facility denial munitions by improving the prediction tools and testing methodologies to evaluate the survivability and functionality of legacy and future fuzes. Development of these technologies will enable next generation boosted and hypersonic penetrators to execute missions against hardened and deeply buried targets.			
FY 2011 Plans: - Start to develop a survivable post-impact intelligent module and fire-set that would become part of a miniaturized fuze for next generation penetrating weapons. This Hardened Miniature Fuze Technology (HMFT) module possesses the capability of media discrimination (concrete, soil, air, etc.) as the penetrator host progresses through the target.			
FY 2012 Plans: - Build HMFT technology hardware for survivability and functionality evaluation in sled testing against complex penetration targets.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P301: *Enabling Fuze Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Start to develop test, redesign and demonstrate recorders in high speed (2500-4000 fps). Start to develop survivable modular fuze technology for multi-role common miniature munitions with distributed/embedded fuzes.			
Title: Tailorable Effects Fuzing ***Description:*** Develop fuzing for tailorable effects weapons that encompasses the ability to selectively vary the output of the weapon (Dial-a-Yield) and/or the ability to generate selectable effects (directed blast, fragmentation). Develop initiation and multi-point technologies; electronic safe and arm based multi-point initiators for tunable output – scalable yield warheads; Micro Electro-Mechanical Systems (MEMS) based multi-point initiators for tunable output/scalable yield warheads; and smart fuzing for tailorable effects weapons. These technologies will enable weapons that can effectively defeat a variety of targets while minimizing unintentional collateral effects. ***FY 2011 Plans:*** - Develop selectable yield warhead multi-point initiation architecture and control concepts including: a) architectures utilizing lower energy detonators/initiators and b) non-conventional multi-point initiation architectures such as energetic multi-points. ***FY 2012 Plans:*** - Apply selectable yield warhead initiation architecture and control concepts into candidate warheads. In particular, Army Technology Objectives (ATOs) related to tairlorable effects will benefit from the 6.3 JFTP efforts. They are Scalable Technology for Adaptable Response ATO and the Sensor Warhead Fuze Technology for Integrated Combined Effects ATO.	-	1.332	1.422
Title: High Reliability Fuzing ***Description:*** Develop high reliability fuzing architectures, fuzing components, and unexploded ordnance (UXO) reduction features. These technologies will enable the next generation of cluster munitions to achieve the required greater than 99% reliability goal. Evolving DoD emphasis on increased weapon system reliability is driving the need to consider new and novel approaches for achieving increased fuze reliability while maintaining or enhancing fuze design safety. DoD policy, higher weapon reliability expectations and harsher weapon system operational requirements are dictating the need for higher fuze reliability than available using current technologies. ***FY 2011 Plans:*** - Begin research, development and demonstration of MEMS device components and fabrication processes for future cluster munitions fuze applications. - Develop and build test phase 1 high reliability fuze architecture technology prototypes that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. ***FY 2012 Plans:***	-	0.660	1.111

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P301: *Enabling Fuze Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Develop and build phase 2 high reliability fuze architecture technology prototypes that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. - Demonstrate high reliability miniature fuzes in air-gun testing, that simulate cluster munitions environments, to achieve Technical Readiness Level (TRL)-5.			
Title: Enabling Fuze Technologies ***Description:*** Develop common / modular fuze architecture; innovative fuze component technologies; sensors; next generation fuze setting capability, tools and modeling; and fuzing power sources. These fuzing technologies will provide smaller, more cost effective solutions while meeting or exceeding the performance of existing technologies. Development of these technologies will enable future weapon applications to be more mission adaptive and smaller along with improve target detection capabilities. ***FY 2011 Plans:*** - Fabricate and test 1st phase MEMS retard and impact sensors and conduct functional testing in simulated environments. - Apply common fuze architecture technology concepts in bomb, missile, and artillery fuze applications to provide enhance fuze modularity, common components and packaging for lower cost and manufacturing ease. ***FY 2012 Plans:*** - Build and test 2nd phase miniature retard and impact sensors for bomb and air dropped munitions. Demonstration will be in relevant environments simulating bomb deployment. - Conduct functional and safety assessment and testing of common fuze architecture technologies: safety components, modular electronics, sensors, interfaces, and packaging.	-	0.840	1.193
Accomplishments/Planned Programs Subtotals	-	3.522	5.051

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0602000D8Z P204: *BA2 Enabling Fuze Technology*	3.818	7.713	7.167		7.167	5.656	6.604	7.312	7.524	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

1) Transitions of technologies developed by the Program are tracked and documented using DoD/NASA TRL scale.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P301: *Enabling Fuze Advanced Technology*

2) FATG Technology Roadmaps are prepared, evaluated, and analyzed by JFTP management and technical staff.
3) Chairman's Annual Assessments for each FATG are critically reviewed by the TAC to determine progress, transition plans, and relevance of each project.
4) Project progress toward goals and milestones is assessed at each FATG meeting.
5) Annual technical reports and papers are tracked and documented for the Program.
6) Technology Transition Agreements in place with Munition programs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603121D8Z: *SO/LIC Advanced Development*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	43.008	44.423	45.028	-	45.028	45.869	46.327	46.833	48.166	Continuing	Continuing
206: *Explosive Ordnance Disposal/ Low-Intensity Conflict*	7.287	7.487	7.661	-	7.661	7.877	8.016	8.158	8.391	Continuing	Continuing
207: *Special Reconnaisance Capabilities*	19.916	20.644	20.858	-	20.858	21.454	21.832	22.213	22.845	Continuing	Continuing
208: *Information Dissemination Concepts*	2.277	3.161	3.235	-	3.235	3.326	3.384	3.444	3.542	Continuing	Continuing
209: *Irregular Warfare Support (IWS)*	13.528	13.131	13.274	-	13.274	13.212	13.095	13.018	13.388	Continuing	Continuing

A. Mission Description and Budget Item Justification

P206, Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC). The EOD/LIC Program develops and delivers advanced capabilities for military Explosive Ordnance Disposal (EOD) operators and Special Operations Forces (SOF) to meet the challenges of improvised explosive devices (IEDs), force protection, and the war on terrorism. EOD/LIC efforts focus in two areas: support to SOF to combat terrorism; and access, detection, identification, and neutralization of all types of conventional explosive ordnance and improvised explosive devices. Requirements submitted by the Joint Service EOD and Service Special Operations communities are prioritized and approved by OASD (SO/LIC &IC).

P207, Special Reconnaissance Capabilities (SRC). The SRC Program exploits, leverages, and integrates DoD's service and agency efforts to improve surveillance and reconnaissance tools (unattended sensors, tagging and tracking devices, data infiltration/exfiltration, remote delivery, and mobility/delivery of sensors), while providing risk reduction for DoD and other agency technology and development programs. The SRC Program identifies, integrates, and operationalizes the technical tools for the collection of actionable information against a variety of targets and mission requirements, including emerging requirements , and maintains DoD's on-line catalog of tools in order to minimize crisis response time for special reconnaissance and surveillance.

P208, Information Dissemination Concepts (IDC). The IDC Program addresses technology capabilities necessary to enable sustained information dissemination campaigns in denied areas. The IDC program, working as necessary with DoD and the interagency, develops, modifies, and demonstrates concepts, mechanisms, platforms and payloads to propagate themes and messages that convince target audiences to take action favorable to the United States and its allies.

P209, Irregular Warfare Support (IWS). The IWS Program (IWSP) develops adaptive and agile capabilities and methodologies to support irregular warfare in the current and evolving strategic environments. IWSP supports joint, interagency, and international partners who conduct or counter irregular warfare through indirect and asymmetric approaches, though they may employ a full range of military and other capabilities, in order to erode an adversary's power, influence, and will. Solutions include material and non-material operational analysis, concept development, field experimentation, and delivery of capabilities, to defeat the motivations, sanctuaries, and enterprises of targeted state and non-state actors.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603121D8Z: *SO/LIC Advanced Development*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	43.808	44.423	45.089	-	45.089
Current President's Budget	43.008	44.423	45.028	-	45.028
Total Adjustments	-0.800	-	-0.061	-	-0.061
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.364	-			
• Other Program Adjustments	-0.436	-	-	-	-
• Economic assumption	-	-	-0.061	-	-0.061

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603121D8Z: *SO/LIC Advanced Development*	PROJECT 206: *Explosive Ordnance Disposal/Low-Intensity Conflict*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
206: *Explosive Ordnance Disposal/ Low-Intensity Conflict*	7.287	7.487	7.661	-	7.661	7.877	8.016	8.158	8.391	Continuing	Continuing

A. Mission Description and Budget Item Justification

P206, Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC). The EOD/LIC program develops and delivers advanced capabilities for military EOD operators and Special Operations Forces (SOF) to meet the challenges of improvised explosive devices (IEDs), force protection, and the war on terrorism. EOD/LIC efforts focus in two areas: support to SOF to combat terrorism; and access, detection, identification, and neutralization of all types of conventional explosive ordnance and improvised explosive devices. Requirements submitted by the Joint Service EOD and Service Special Operations communities are prioritized and approved by Office of the Assistant Secretary of Defense (OASD) (SO/LIC &IC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Ordnance Disposal/Low-Intensity Conflict (EOD/LIC)	7.287	7.487	7.661
FY 2010 Accomplishments: Evaluate integrated sensors to detect threats through foliage and obscurants onto SOF Riverine crafts. Transition to a program of record or commercialize a bladderless lift balloon for Special Operations and EOD underwater missions. Design tools to enhance arm dexterity and reconnaissance capability of robotic platforms. Develop a fast rope descender that will increase service member survivability and reduce injury while conducting fast rope insertions. Develop a replacement for existing EOD disruptors with one kit designed to reduce size and weight for equipment load-out. Investigate technologies to develop a more reliable underwater acoustic transmitter and receiver to remotely arm and fire EOD tools used for limpet mine neutralization. Validate a program of instruction to increase EOD capability to interdict and disable terrorist devices.			
FY 2011 Plans: Evaluate a fast rope descender that will increase service member survivability and reduce injury while conducting fast rope insertions. Test a modular EOD disruptor that duplicates the ballistic performance of existing disruptors. Evaluate an underwater acoustic transmitter and receiver to remotely arm and fire EOD tools used for limpet mine neutralization. Design tools to enhance arm dexterity and reconnaissance capability of robotic platforms.			
FY 2012 Plans: Develop tools and equipment to enhance situational awareness and operational capability during incident response or direct action operations. Transition to a Program of Record or commercialize the EOD Helmet Liner that allows an operator to optimize fit of an EOD helmet in a deployed setting with minimal support equipment. Deliver a non-lethal method to stop small boats using high power microwaves to disrupt electronically controlled outboard engines.			
Accomplishments/Planned Programs Subtotals	7.287	7.487	7.661

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603121D8Z: *SO/LIC Advanced Development*	**PROJECT** 206: *Explosive Ordnance Disposal/Low-Intensity Conflict*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

SO/LIC Advanced Development - PE 0603121D8Z; Explosive Ordnance Disposal & Low-Intensity Conflict/P206; Special Reconnaissance Capabilities/P207; Information Dissemination Concepts/P208; Irregular Warfare Support/P209

Long Term Strategies: Obtain adequate funding to support critical shortfalls; prioritize proposals that are deemed acceptable and allocate funding accordingly; and establish outreach to leverage institutional knowledge and expertise.

Performance Indicator and Rating:

FY 2010 Target:
70% of currently funded research projects are completed on time and within budget
Increase the number of project's transition to operational use
Transition scheduled projects to user communities

FY 2011 Target:
70% of currently funded research projects are completed on time and within budget
Increase the number of project's transition to operational use and reduce timelines to transition.

Basis of FY 2009 to Date Performance Rating:
Currently the number of funded research projects are on track to be completed per the target.

Verification: The SO/LIC &IC Advanced Development Program projects each track the status of their efforts. Reviews are conducted to assess project status. Oversight of the entire effort is undertaken by ASD SO/LIC &IC.

Validation: Completed research products increase the capabilities of the DoD to effectively detect, deter and defend against terrorist attacks; defeat improvised explosive devices and unexploded ordinance; enable sustained information operations in denied areas; and contribute to resolution of hostile, unconventional conflicts.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603121D8Z: *SO/LIC Advanced Development*	PROJECT 207: *Special Reconnaisance Capabilities*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
207: *Special Reconnaisance Capabilities*	19.916	20.644	20.858	-	20.858	21.454	21.832	22.213	22.845	Continuing	Continuing

A. Mission Description and Budget Item Justification

P207, Special Reconnaissance Capabilities (SRC). The primary objective of the SRC program is to seek out and identify technical tools for the collection of actionable data and information which will assist DoD in its execution of Overseas Contingency Operations (OCO) tasks. To accomplish this objective, the program leverages emerging and existing developmental technologies from government and commercial ventures and operationalizes them to meet near term reconnaissance and surveillance operational requirements. The operational tools transition unattended sensors, tagging devices, data transfer, remote delivery, and mobility/delivery of sensors into established Programs of Record throughout the DoD. The program evaluates new and existing technical surveillance technologies and incorporates results into a reference database for future access.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: SPECIAL RECONNAISANCE CAPABILITIES	19.916	20.644	20.858
FY 2010 Accomplishments: SRC assessed, evaluated, and initiated the integration of 15 sensor, tag, and optical capabilities in response to warfighter requirements. User-required devices transitioned into Programs of Record and deployed world-wide were: Keymaker; Cardinal System; Portable Airborne Interrogator Transponder System (PAITS); Optical Taggants; Multiple Access Tracker (MAT); and Ironstar. SRC supported global operations by providing training and technology assistance for unattended ground sensor and tag prototypes for persistent intelligence, surveillance, and reconnaissance (ISR) tasks. The program evaluated over 800 new and existing technical surveillance technologies and incorporated results into a reference database for future access. SRC continued exploitation of enabling technologies (including nanotechnology, biotechnology, and chemistry) to develop state-of-the-art tags, taggants, sensors, communications and power devices to address user-defined capability gaps.			
FY 2011 Plans: SRC will continue to identify, develop, integrate, and field promising persistent intelligence, surveillance, and reconnaissance (ISR) advanced technologies and capabilities. High payoff technologies that will be researched and transitioned include: audio and optical technologies; improvement in flexibility and accuracy through integration of disparate technologies into single devices; ultra high speed data processing and transmission; next-generation nanotechnology/miniaturization; affordable Application Specific Integrated Circuit (ASIC) technology; low profile enhanced micro-optics; next-generation precision Hostile Forces Tagging, Tracking, and Locating capabilities; low profile, advanced material miniature antennas; placement and concealment of unattended ground sensors; and low power, high bandwidth data transmission sub-systems.			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603121D8Z: *SO/LIC Advanced Development*	PROJECT 207: *Special Reconnaisance Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Continue to identify, develop, integrate, and field promising persistent intelligence, surveillance, and reconnaissance (ISR) advanced technologies and capabilities. High payoff technologies that will be researched and transitioned include: audio and optical technologies; improvement in flexibility and accuracy through integration of disparate technologies into single devices; ultra high speed data processing and transmission; next-generation nanotechnology/miniaturization; affordable Application Specific Integrated Circuit (ASIC) technology; low profile enhanced micro-optics; next-generation precision Hostile Forces Tagging, Tracking, and Locating capabilities; low profile, advanced material miniature antennas; placement and concealment of unattended ground sensors; and low power, high bandwidth data transmission sub-systems.			
Accomplishments/Planned Programs Subtotals	19.916	20.644	20.858

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603121D8Z: *SO/LIC Advanced Development*	PROJECT 208: *Information Dissemination Concepts*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
208: *Information Dissemination Concepts*	2.277	3.161	3.235	-	3.235	3.326	3.384	3.444	3.542	Continuing	Continuing

A. Mission Description and Budget Item Justification

Information Dissemination Concepts (IDC). The IDC Program addresses technology capabilities necessary to enable sustained information dissemination campaigns in denied areas. The IDC Program, working as necessary with DoD and the interagency, develops, modifies, and demonstrates concepts, mechanisms, platforms and payloads to propagate themes and messages that convince target audiences to take action favorable to the United States and its allies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: INFORMATION DISSEMINATION CONCEPTS	2.277	3.161	3.235
FY 2010 Accomplishments: USPACOM's Multimedia Alert Processing System (PACOM MAPS): Coordinate additional foreign language collection tools deriving from various sources. Provide new filters for operators to quickly triage large volumes of data from different sources of media. Enhance language learning tools' capabilities for sustaining proficiency and for responding to operator mission needs. Improve the ability to search and manage information. Increase cultural and situational awareness and responsiveness using automated language tools. Conduct further field evaluations of selected technologies. Accelerate the transition of advanced foreign language technology to the operational community.			
FY 2011 Plans: Enhance language learning tools' capabilities. Adapt and integrate existing foreign language applications, practices, and tools into a tactical site exploitation capability. Improve the timely collection of intelligence and evidence to support follow-on targeting, effective detainee prosecution, and theater-wide exploitation of tactical intelligence. Deploy capabilities that will enrich language packet creation with a variety of media sources. Deliver a capability that supports the automated inbound and outbound integration of available video and audio sources. Develop novel approaches to query, track, and exploit multimedia from broadcast, radio, offline videos, and web sources.			
FY 2012 Plans: Develop tools that assist the military in foreign language training courses. Improve foreign language applications, practices, and tools that are deployed in theater. Expedite methods of collecting and analyzing media sources and evidence more efficiently and timely. Enhance triage capabilities to store, organize, and query multimedia acquired from various sources. Deploy automated technologies capable of ingesting and translating video and audio sources for analysts to effectively report intelligence findings.			
Accomplishments/Planned Programs Subtotals	2.277	3.161	3.235

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603121D8Z: *SO/LIC Advanced Development*	PROJECT 208: *Information Dissemination Concepts*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603121D8Z: *SO/LIC Advanced Development*	PROJECT 209: *Irregular Warfare Support (IWS)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
209: *Irregular Warfare Support (IWS)*	13.528	13.131	13.274	-	13.274	13.212	13.095	13.018	13.388	Continuing	Continuing

A. Mission Description and Budget Item Justification

P209, Irregular Warfare Support (IWS). The IWS Program (IWSP) develops adaptive and agile capabilities and methodologies to support irregular warfare in the current and evolving strategic environments. IWSP supports joint, interagency, and international partners who conduct or counter irregular warfare through indirect and asymmetric approaches, though they may employ a full range of military and other capabilities, in order to erode an adversary's power, influence, and will. Solutions include material and non-material operational analysis, concept development, field experimentation, and delivery of capabilities, to defeat the motivations, sanctuaries, and enterprises of targeted state and non-state actors.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: IRREGULAR WARFARE SUPPORT (IWS)	13.528	13.131	13.274
FY 2010 Accomplishments: Research and develop capabilities that support the Department of Defense and Interagency Irregular Warfare mission in accordance with the Irregular Warfare Joint Operating Concept, DODD 3000.05, DODD 3000.07, and NSPD-44. Continue spiral development of capabilities based on lessons learned during field experimentation and the dynamic nature of adversaries. Identify adaptation and/or transition opportunities from analysis and assessment investments. Research and develop solutions for the International Security Assistance Force (ISAF) to solve critical capability gaps to re-orient a diverse, dispersed force, during major counterinsurgency operations. Analyze and support development of solutions for a holistic counterinsurgency campaign and approach to include rapid feedback on technical counterinsurgency issues to the ISAF commanders and leaders. Research, design and field-test solutions to enhance and improve client organization efforts to erode adversaries' power, influence, and will through non-kinetic operations. Support development of new capabilities for the rapidly evolving Traditional Military Information Operations by Geographical Combatant Commanders (GCC). Develop new command and control doctrine for military intelligence forces and operational staffs for rapid operational evaluation in-theater. Develop and field-test a pilot program to assist military commands in building host-nation intelligence capacity and capability to include the feasibility of migrating to other areas of operation the unique doctrine and lessons learned during support to Operation Iraqi Freedom.			
FY 2011 Plans: Research and develop promising capabilities and continue project development, delivery, and transition to support the Department of Defense and Interagency Irregular Warfare mission. Projects will identify and address requirements from the following major focus areas: Effects-Based Operations Integration; Indirect Communications Support; Knowledge Management; Mission Rehearsal and Exercise; and Pursuit and Denial. Deliver tailored counterinsurgency capabilities to ISAF in order to address capability gaps realized during development of prototype solutions. After pilot experimentation in new areas of operations, deliver			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603121D8Z: *SO/LIC Advanced Development*	PROJECT 209: *Irregular Warfare Support (IWS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
and transfer to specific operational customers the capability for improved host-nation police counterinsurgency capabilities. Support implementation of newly developed command and control structures, optimized for counterinsurgency and irregular warfare unit task organizations, at operational and tactical command levels. Develop capabilities; assess effectiveness of current strategies and capabilities; design solutions to integrate into current systems; and develop enhanced Irregular Warfare training and education programs across participating agencies. Continue spiral development of capabilities to enhance methodologies and operational solutions. Identify adaptation and/or transition opportunities from analysis and assessment investments to include other areas of potential threat and engagement with hostile organizations and supporting structures. ***FY 2012 Plans:*** Research and develop promising capabilities and continue project development, delivery, and transition to support the Department of Defense and Interagency Irregular Warfare mission. Continuing under IW Joint Operational Concept (JOC) and DODD 3000.07 on IW; the research and development path will conduct operational analysis and concept design efforts in supporting 2010 QDR and NSS lines of engagements. Pursue prevent and deter conflict that address supporting U.S. diplomatic and development efforts to foster a range of governance efforts and to counter radicalization, including working with civilian agencies on security assistance and police training programs. Research and develop non-material approaches to deterring/countering violent extremism and			
Accomplishments/Planned Programs Subtotals	13.528	13.131	13.274

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	124.901	85.299	77.019	-	77.019	89.298	90.622	92.051	94.671	Continuing	Continuing
484: *Combating Terrorism Technology Support (CTTS)*	124.901	85.299	77.019	-	77.019	89.298	90.622	92.051	94.671	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Combating Terrorism Technical Support (CTTS) program develops and delivers capabilities that address needs and requirements with direct operational application in the national effort to combat terrorism. Projects are distributed among 10 mission categories: Advanced Analytics and Capabilities, Chemical, Biological, Radiological, and Nuclear Countermeasures; Explosives Detection; Improvised Device Defeat; Investigative Support and Forensics; Personnel Protection, Physical Security; Surveillance, Collection, and Operations Support; Tactical Operations Support; and Training Technology Development. This program is a diverse, advanced technology development effort that capitalizes on interagency and international participation to demonstrate the utility or effectiveness of technology when applied to combating terrorism requirements. It includes technology capability development, proof-of-principle demonstrations in field applications, and coordination to transition from development to operational use.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	81.868	85.299	87.124	-	87.124
Current President's Budget	124.901	85.299	77.019	-	77.019
Total Adjustments	43.033	-	-10.105	-	-10.105
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	10.000	-			
• SBIR/STTR Transfer	-2.129	-			
• Other Adjustments	-1.078	-	-10.000	-	-10.000
• Congressional Adds	36.240	-	-	-	-
• Economic Assumptions	-	-	-0.105	-	-0.105

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: 484: *Combating Terrorism Technology Support (CTTS)*		
Congressional Add: *Full Scale Impact and Blast Loading Laboratory Testing Program*	-	-
Congressional Add: *Improved LAS Glass-Ceramic Laminated Amored Window Systems*	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603122D8Z: *Combating Terrorism Technology Support*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Congressional Add: *Machine Augmented Composite Armor*	-	-
Congressional Add: *Validation of an Enhanced Urban Air Blast Tool*	-	-
Congressional Add: *Bioterriorism Operations Policy for Public Emergency Response (BOPPER)*	1.000	-
Congressional Add: *Robotic Mobility Platform System*	-	-
Congressional Add: *Port and Hull Securtiy 3D, Real Time Sonar System Echoscope*	-	-
Congressional Add: *Tactical Biometric Operating and Surveillance system (TBOSS)*	-	-
Congressional Add: *Biometric Terrorist Watch-List Database Management Development*	-	-
Congressional Add: *Covert Sensing and Tagging System (CSTS)*	1.200	-
Congressional Add: *Document and Media Search and Discovery (DMSD)*	-	-
Congressional Add: *EDIT Technology for Counter-Tunnel Operations and Cache Detection*	-	-
Congressional Add: *Facial Recognition Technology Initiative*	-	-
Congressional Add: *Remote Sensor Network Services Platform*	-	-
Congressional Add: *Low Cost Stabilized Turret*	0.800	-
Congressional Add: *Roll-on Roll off Reconnassanice, Surveillance & Special Mission Palletized System*	-	-
Congressional Add: *Ultra Portable Unmanned Surveillance Helicopter*	-	-
Congressional Add: *Unmanned Aerial Vehicle Avionics Upgrade (UAVAU)*	-	-
Congressional Add: *SOF Unattended Sensor Network*	-	-
Congressional Add: *Radio Inter-Operability System (RIOS)*	1.600	-
Congressional Add: *CTTSO/STAR-TEC Partnership Program*	-	-
Congressional Add: *Facility Security Using Tactical Surveys*	3.600	-
Congressional Add: *Military/Law Enforcement Counterterrorism Test Bed*	2.400	-
Congressional Add: *Affordable Robust Mid-Sized Unmanned Ground Vehicle*	1.600	-
Congressional Add: *Comprehensive and Integrated Procedures for Risk Assessment and Resource Allocation*	2.000	-
Congressional Add: *Integrated Rugged Checkpoint Container*	2.000	-
Congressional Add: *Ultra Low Profile EARS Gunshot Localization System*	1.200	-
Congressional Add: *Remote VBIED Dection and Defeat System*	1.200	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603122D8Z: *Combating Terrorism Technology Support*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Congressional Add: *Dynamic Data Flow Management System*	1.600	-
Congressional Add: *Emergency Egress System*	1.600	-
Congressional Add: *Expeditionary Surveillance and Reconnaissance Program*	4.000	-
Congressional Add: *IdentClarity-Identity Resolution*	1.440	-
Congressional Add: *MARCENT Thermal Imaging Suite*	3.000	-
Congressional Add: *Omni Directinal Relay and Conformal Antenna*	2.500	-
Congressional Add: *Reconnaissance and Data Exploitation (REX) System*	3.500	-
Congressional Add Subtotals for Project: 484	36.240	-
Congressional Add Totals for all Projects	36.240	-

Change Summary Explanation

In the last week of FY 2010 CTTSO received a Department JUON (Joint Urgent Operational Needs) reprogramming (+$10M) to rapidly develop of ADVANCED ANALYTICS AND CONCEPTS program required for forces in Afghanistan.

The FY 2012 baseline budget was reduced by -$10M due to higher priorities within the Department. CTTSO will continue to assess and prioritize combating terrorism and counterinsurgeny priorities and reallocate funds due to this unexpected reduction. The $10M reduction will decrease the S&T efforts to rapidly prototype across all nine sub group programs but primarily in the Physical Security S&T efforts (-15%); Surveillance, Collection, and Operations support program (-15%); and the Tactical Operations Subgroup (-9.7%)

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR COUNTERMEASURES	5.857	7.297	6.817
FY 2010 Accomplishments: Evaluated performance of a pathogen- and puncture-resistant glove for military and law enforcement tactical operations. Operationally tested a tactical response boot with integrated chemical protection. Tested and evaluated an air supply pass through kit for Level A chemical protective ensembles. Developed test protocol for special-needs populations escape hoods. Tested and evaluated an advanced small-room chemical and biological filtration system. Tested and evaluated an advanced adsorbent material to capture gaseous chemical threat agents. Optimized, tested, and evaluated a software decision support tool for determination of chemical agent filter life. Developed tools for providing enhanced protection with the M53 tactical respiratory mask. Operationally tested the hydration status monitor. Developed a stand-off patient triage tool for evaluating patient viability. Developed and test a three-dimensional tracking and locating tool. Developed an orthogonal detection system for identifying toxic			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
industrial chemicals and chemical warfare agents. Tested and evaluated a total organic carbon detector for water utility systems. Developed a standardized test method for the evaluating the effects of Electronic Countermeasures (ECM) on commercially available detectors. Developed a detection kit for homemade explosive precursor materials. Developed a best practices field guide for mail screening and handling. ***FY 2011 Plans:*** Design new protective garments providing percutaneous protection against evolving threats. Perform heat stress studies on Class 3 CBRN protective ensembles. Develop next generation systems for both respiratory and collective protection. Develop noise cancelling technology for enhanced communications while wearing an self contained breathing apparatus. Evaluate a pocket-size, low-profile escape respirator for operational needs and test to the European standards. Develop a desalination filter for rending estuary waters potable. Develop a person portable mass spectrometer with gas chromatograph inlet for the rapid detection and identification of target chemicals. Evaluate systems for detection of non-traditional agents. Evaluate the effects of ECM on commercially available detectors. Test and evaluate a new orthogonal detection system against toxic industrial chemical challenges. Test and evaluate a detection kit for homemade explosive precursor materials. Develop a risk-based decision support model for skin decontamination following dermal exposures. Develop tools for the decontamination of traditional and non-traditional agents from personnel and equipment. Field a best practices guidebook for mail screening and handling. ***FY 2012 Plans:*** Develop next generation systems for both respiratory and collective protection. Develop enhanced testing procedures for the evaluation of protective ensembles. Test and evaluate inconspicuous protective garments against evolving threats. Develop, test and field protective ensembles providing enhanced chem.-bio protection in tactical environments. Operationally test and evaluate a desalination filter for military field survival situations. Evaluate tools for the decontamination of infrastructure, personnel, and equipment. Field an orthogonal system for the detection and identification of toxic industrial chemicals. Test and evaluate a person portable mass spectrometer with gas chromatograph inlet for the rapid detection and identification of target chemicals. Test and evaluate solid oxidant materials for field decontamination methods.			
Title: Concept Developement ***Description:*** Moved to Personnel Protection subgroup. ***FY 2010 Accomplishments:*** Moved to Personnel Protection subgroup ***FY 2011 Plans:*** Moved to Personnel Protection subgroup	-	-	-
Title: EXPLOSIVES DETECTION	7.286	8.004	7.408

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Developed active illumination upgrade to imaging and anomaly detection systems for personnel screening. Conducted a side-by-side evaluation of sensors for suicide bomber detection. Evaluated sub millimeter wave imaging and anomaly detection technology for standoff detection. Investigated spectra of chemical compounds related to the presence of explosives or physical signatures of components for database. Tested and evaluated vehicle X-ray system. Demonstrated feasibility of expeditionary wet chemical detection kits for explosive precursors. Demonstrated feasibility of a walkthrough explosive detection portal. ***FY 2011 Plans:*** Incorporate fusion and detection algorithms, synchronize electronics, and demonstrate feasibility of an active illumination upgrade to imaging and anomaly detection system. Develop breadboard sub millimeter wave imaging and anomaly detection system. Incorporate spectra of explosive signatures into existing databases. Fabricate and assess prototype expeditionary wet chemical kits for explosives precursor detection. Fabricate and test a walkthrough explosives detection portal. ***FY 2012 Plans:*** Incorporate unique explosive spectra into a prototype detection system. Fabricate the prototype of an orthogonal sensor standoff system. Continue development of systems for sub-millimeter wave imaging of personnel for explosive detection. Fabricate and assess prototype expeditionary wet chemical kits for explosives precursor detection. Develop a portable system to quickly screen personnel for explosive threats at temporary venues.			
Title: IMPROVISED DEVICE DEFEAT	4.878	5.901	5.610
FY 2010 Accomplishments: Fielded, and tested a robotically deployed JAUS compliant visual and X-ray targeting system. Transitioned the Eyeball R1 camera system to COTS and integrate with EOD robotic platforms. Conducted explosive tool characterization of select IED/ VBIED countercharges and disruptors for population of the Decision Support Tool Characterization Guide. Developed a manual manipulation tool kit for IED interrogation. Upgraded, tested, and evaluated currently fielded ECM systems for the neutralization of IEDs. Developed an instant IED notification system. Field-tested and evaluated the Body Bomb Tool Kit. Tested the robotically employed Single-Sided X-ray Imaging System. Developed advance power solutions for conducting sustained robotics operations and employment of EOD-peculiar equipment. Developed and field a camera blinding system for special operations. Developed interchangeable end effectors for use on robotic arms. Evaluated emerging remote control improvised explosive device (RCIED) threats to aid in the development, design, and testing of next generation ECM-related bomb disposal equipment. ***FY 2011 Plans:*** Design, and develop next generation ECM-related equipment. Incorporate final modifications and commercialize the robotically employed Single-Sided X-ray Imaging System. Conduct explosive tool characterization of select IED/VBIED disruption charges for population of the Tool Characterization Guide. Develop an enhanced manual entry capability for access and diagnostics of			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
terrorist devices. Develop advance detection and diagnostic tools for support of mass transit incidents involving acts of terrorism. Field-test, and evaluate ECM tools and equipment to counter emerging RCIED threats. Develop tools and equipment for the neutralization of surface, subsurface, and underwater explosive threats. Develop a VBIED Precision Identification and Disruption Tool. Develop tools and methods to neutralize homemade explosives. Field-test, and evaluate the robotically deployed VBIED access tool kit. Evaluate the camera blinder prototype. Test the Single-Sided Imaging System. ***FY 2012 Plans:*** Incorporate unique explosive spectra into a prototype detection system. Fabricate the prototype of an orthogonal sensor standoff system. Continue development of systems for sub-millimeter wave imaging of personnel and vehicles for explosive detection. Fabricate and assess prototype expeditionary wet chemical kits for explosives precursor detection. Develop a portable system to quickly screen personnel for explosive threats at temporary venues.			
Title: INFRASTRUCTURE PROTECTION ***FY 2010 Accomplishments:*** Moved to Physical Security. ***FY 2011 Plans:*** N/A	-	-	-
Title: INVESTIGATIVE SUPPORT AND FORENSICS ***FY 2010 Accomplishments:*** Fielded improved questioned document analysis techniques for analyzing disguised handwriting. Expanded human scent collection from forensic evidence research. Fielded advance interview techniques based on cognitive load principles. Identified shortcomings within deployment, training, and training aids for military working dogs. Distributed an automated system for collecting hidden computer data. Fielded automated credibility assessment procedures. Delivered a thermal imaging polygraph measurement system. Fielded canines for detection of suicide bombers and tunnels. ***FY 2011 Plans:*** Distribute a trace explosive materials reference and pocket guide. Field protocols for forensic bomb render safe procedures. Produce advanced techniques for efficient direct interpersonal credibility assessments. Distribute advanced computer forensic technologies. Evaluate the efficiency and accuracy of facial expression credibility systems. Deliver a canine-borne surveillance system. Field a combating terrorism and reliability assessment tool. Establish an online accessible forensic video player examination reference system. Distribute soil location identification system. Deliver a remote viewer for evidence manipulation and comparison for use between theater and U.S.-based labs. ***FY 2012 Plans:***	3.747	4.585	4.431

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Characterize EOD Disruptors fired against HME. Develop next generation ECM-related equipment. Conduct explosive tool characterization of IED/VBIED counter charges and update the Tool Characterization Guide. Deliver the Miniaturized IED Diagnostics and Defeat Kit for Special Operating Forces. Develop equipment to counter emerging RCIED threats. Develop tools and equipment for the neutralization of surface, subsurface, and underwater explosive threats. Deliver and commercialize the expanded Body Bomb Tool Kit for robotic employment. Study dress down alternatives for bomb suits.			
Title: PHYSICAL SECURITY	12.018	14.712	12.330
FY 2010 Accomplishments: Improved and develop decision aids to assist with pre-event, preventative planning. Promulgated common test protocols and design standards based on results from threat-based test programs. Continued test program in an urban environment to better understand impact on facades, street furniture, tunnels, and infrastructure. Characterized homemade explosive mixes. Developed deployable, tactical and integrated security system concepts. Test and compare prescreening and surveillance equipment that is usable by security forces in high threat operations. Developed a database that meets interagency and international requirements to address the adaptive threat associated with homemade explosives based on past characterization and research data. Developed capabilities to detect, locate, survey, and disrupt subterranean operations. Expanded focus areas to include harbor and port security solutions			
FY 2011 Plans: Deploy decision aids to assist with pre-event, preventative planning. Coordinate results from test programs to determine best solutions for temporary, semi-permanent or permanent facilities. Coordinate design standards with appropriate government agencies for increased force protection. Expand test program in an urban environment to include novel explosives and effects of soft structures. Complete construction of a facility for iterative testing of equipment and tactics, techniques, and procedures. Deploy deployable, tactical and integrated security system concepts. Develop enhanced video assessment and tracking techniques. Deploy a comprehensive homemade explosives database with multiple levels of access. Deploy and integrate capabilities to detect, locate, survey, and disrupt subterranean operations. Develop solutions for harbor and port security solutions. Demonstrate a system that provides night vision capabilities to austere outposts. Provide advanced technologies for operational assessments, field training, and operational support that satisfy urgent requirements in support of deployed forces. Demonstrate an integrated suite of ruggedized screening technologies.			
FY 2012 Plans: Continue test program in an urban environment using modular configurations to represent urban environments to better understand impact of fixed urban structures on blast wave propagation. Demonstrate a fast running tool to assist DoD and			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
first responder personnel in predictive analysis in an urban environment. Field test enhanced video assessment and tracking techniques. Continue to populate a comprehensive homemade explosives database with multiple levels of access. Operationally test and evaluate a next generation SWIR for use in tactical environments. Field test a portable persistent surveillance system for covert emplacement and enhanced tracking of potential illegal activity. Transition a security system that contains a camera observation system and a sensor alarm system in one for semi-covert and concealable installation.			
Title: BUSINESS OPERATIONS ***Description:*** Formerly named Program Management. ***FY 2010 Accomplishments:*** Provided program management oversight and technical support for CTTS R&D projects including funds from other agencies and management of international cooperative R&D programs. Established goals, objectives, and immediate revisions to plans that will reinforce interagency participation for the identification and prioritization of CTTS mission area requirements. Directed the program, planning and execution for projects and associated contracts using direct and indirect budget allocations. Reviewed and revise existing process and execution plans for CTTS mission area management and reporting responsibilities. ***FY 2011 Plans:*** Provide program management oversight and technical support for CTTS R&D projects including funds from other agencies and management of international cooperative R&D programs. Establish goals, objectives, and immediate revisions to plans that will reinforce interagency participation for the identification and prioritization of CTTS mission area requirements. Direct the program, planning and execution for projects and associated contracts using direct and indirect budget allocations. Review and revise existing process and execution plans for CTTS mission area management and reporting responsibilities. ***FY 2012 Plans:*** Provide program management oversight and technical support for CTTS R&D projects including funds from other agencies and management of international cooperative R&D programs. Manage the business execution of the CTTS Program. Direct the program, planning and execution for projects and associated contracts using direct and indirect budget allocations. Provide effective management support tools to improve efficiencies. Review and revised existing process and execution plans for CTTS mission area management and reporting responsibilities. Increase organization outreach. Facilitate technology transition.	14.901	9.780	8.983
Title: SURVEILLANCE, COLLECTION AND OPERATIONS SUPPORT ***FY 2010 Accomplishments:*** Enhanced various technologies for precise geolocation of targets of interest. Improved tagging, tracking and locating infrastructure including development of smart tags that can alert preset conditions. Developed tools to assist in the tactical triage	12.240	14.595	12.356

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
of collected Cellular exploitation micro-electronic device exploitation especially in languages of particular interest. Developed exfiltration capabilities for real-time audio and video surveillance. ***FY 2011 Plans:*** Adapt and integrate existing foreign language applications, practices, and tools into a tactical site exploitation capability. Improve the timely collection of intelligence and evidence to support follow-on targeting, effective detainee prosecution, and theater-wide exploitation of tactical intelligence. Enhance the capability to identify targets through biometric modalities. Streamline the processes of data collection, sharing, identity management, mobile identification and detection of targets of interest. Develop enhanced capabilities, force structures, and training programs to leverage Information Operations capabilities ***FY 2012 Plans:*** Field technical surveillance capabilities. Improve operational tactics, techniques, and procedures used by military working dog teams. Deploy expeditious foreign language analytical tools in support of tactical exploitation. Enhance research and technology to assist analysts with biometric intelligence and reporting. Develop advanced Information Operations applications, practices, and tools. Evaluate methods of improving intelligence, surveillance, and reconnaissance technologies in Unmanned Aerial Systems.			
Title: TACTICAL OPERATIONS SUPPORT ***FY 2010 Accomplishments:*** Developed an integrated, handheld device that combines a COTS GPS receiver, a standard military Blue Force Tracker and Combat Survivor/Evader Locator radio for use during evasion of enemy forces or contingency operations. Developed an ultra-lightweight UAS payload with cooled IR, color CCD, laser pointer and laser designator for UAS applications. Developed a persistent real-time surveillance system that will have an integrated power supply (72 hrs live streaming) and SATCOM/Cellular data-link connection. Developed a system that provides a self-healing, ad hoc mesh air-to-ground network for the transmission of real-time communications (voice and data). Developed a comprehensive reference source to summarize the performance characteristics of the available and proven breaching methods, tools, and tactics as they apply to the maritime environment. Developed a time-activated restraint and release system to temporarily restrain potential threat individuals for a predetermined period of time. Developed a backlit wrist worn compass that allows the end user to easily view cardinal directions whether in a well-lit or dark environment. Developed a fully integrated helmet using advanced materials that is capable of withstanding NIJ Level IIIA body armor ballistic threats as well as bodily damage against blast, fragmentation, and blunt trauma threats. Developed an internal frame load bearing system that provides the wearer with a system that easily accepts standard hard and soft armor plates, distributes the weight of the armor and load evenly throughout the body, and does not restrict any normal body movements. Developed systems for the exploitation of commercial electronics, communications and computing for special reconnaissance. Developed a mortar targeting system with an integrated Fire Control System that provides rapid firing solutions and translates that to auto-laying of either a 120mm or 81mm US standard mortar tubes. Developed a point of instruction and	7.405	8.049	7.445

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
provide new equipment for special operations forces to enhance advanced marksmanship at ranges up to 600 meters. Developed a small, affordable imaging device capable of extracting object depth information along with a video stream of scenes. Delivered a portable system of wireless infrared illuminators with motion sensors to enhance site security for tactical forces. Delivered an optical voice and data communications system that attaches to a sniper optical device for use during tactical operations. ***FY 2011 Plans:*** Develop a lightweight, compact personal IR emitter capability for emplacement on a person's helmet or outermost garment. Develop a training aid to improve a soldier's trigger control, resulting in better shooting proficiency and shorter training time. Develop and deliver an ultra-mobile tactical computer for use by ground forces. Deliver an integrated, handheld device that combines a COTS GPS receiver, a standard military Blue Force Tracker and Combat Survivor/Evader Locator radio for use during evasion of enemy forces or contingency operations. Deliver an ultra-lightweight UAS payload with cooled IR, color CCD, laser pointer and laser designator for UAS applications. Deliver a persistent real-time surveillance system that will have an integrated power supply (72 hrs live streaming) and SATCOM/Cellular data-link connection. Deliver a system that provides a self-healing, ad hoc mesh air-to-ground network for the transmission of real-time communications (voice and data). Deliver a comprehensive reference source to summarize the performance characteristics of the available and proven breaching methods, tools, and tactics as they apply to the maritime environment. Deliver a time-activated restraint and release system to temporarily restrain potential threat individuals for a predetermined period of time. Deliver a backlit wrist worn compass that allows the end user to easily view cardinal directions whether in a well-lit or dark environment. Deliver a fully integrated helmet using advanced materials that is capable of withstanding NIJ Level IIIA body armor ballistic threats as well as bodily damage against blast, fragmentation, and blunt trauma threats. Deliver an internal frame load bearing system that provides the wearer with a system that easily accepts standard hard and soft armor plates, distributes the weight of the armor and load evenly throughout the body, and does not restrict any normal body movements. Deliver systems for the exploitation of commercial electronics, communications and computing for special reconnaissance. Deliver a mortar targeting system with an integrated Fire Control System that provides rapid firing solutions and translates that to auto-laying of either a 120mm or 81mm US standard mortar tubes. Deliver a point of instruction and provide new equipment for special operations forces to enhance advanced marksmanship at ranges up to 600 meters. Deliver a small, affordable imaging device capable of extracting object depth information along with a video stream of scenes. ***FY 2012 Plans:*** Develop an upper receiver group that provides significant suppression of both sound and flash from the current US standard M4 carbine. Develop a handheld intelligence, surveillance, target acquisition, reconnaissance system. Develop a single-man portable, collapsible-wing tactical unmanned aerial system with a secure mobile ad-hoc network data-link that is capable of being hand-launched in a man-portable canister. Develop a communication system that allows Tactical Operations Centers to send and receive large amounts of data from front-line operators in real-time. Develop a system that will alert a commander as to the status of his deployed sniper teams. Deliver a lightweight, compact personal IR emitter capability for emplacement on a person's			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
helmet or outermost garment. Deliver a training aid to improve a soldier's trigger control, resulting in better shooting proficiency and shorter training time.			
Title: TRAINING TECHNOLOGY DEVELOPMENT ***FY 2010 Accomplishments:*** Developed adaptive, artificial intelligent crowd models to train warfighters in handling crowd-related scenarios (e.g., riot control, disaster management, emergency evacuation, rescue operations, urbanized conflicts, etc.), formulate strategies, answer "what-if" scenarios, and evaluate contingency plans. Designed and develop a simulator for the M134 Minigun weapon system that accurately mimics the form and functionality of the actual weapon system, and integrate the simulator into a simulated training environment with realistic scenarios. Developed a virtual live-fire simulation housed in a container that can duplicate the conditions of a long, known distance range complex and an urban environment. ***FY 2011 Plans:*** Design and develop a training package that includes instructor-led training and supporting publications for the squad leader/ observer and his squad to access Close Air Support (CAS). Develop a user reloadable device that can be used during training scenarios to provide realistic consequences for a simulated IED or Explosively Formed Penetrator. Analyze mobile learning architectures and Web 2.0 technologies and develop job aids, content resources, and training courses for use within the military. ***FY 2012 Plans:*** Design and develop a training package, including computer-based training, instructor-led training, and student support materials, on the topic of counter tunnel investigations. Analyze, design, and develop best practices for the military community on the implementation of the Shareable Content Object Reference Model. Design and develop an enhanced improvised explosive devices (IEDs) effects training capability for use in a live, virtual, and constructive (LVC) training environment. Conduct an assessment study of existing commercial, military, interagency, and international Homemade Explosives (HME) training courses. Design, develop, and evaluate a training aid to improve soldier's trigger control.	3.854	4.322	4.190
Title: Personnel Protection ***Description:*** Formerly named VIP Protection ***FY 2010 Accomplishments:*** Tested and deployed the ruggedized VIP security kit for indoor/outdoor surveillance and intrusion detection. Evaluated domestic and overseas performance of the high-risk personnel tracking and locating device. Developed a protective services portal training system for incorporation into an existing law enforcement training course and a stand-alone portal for use in the field. Demonstrated performance of the advanced methodologies and automated analytical tools on counterintelligence data sets. Tested the post-event gunfire analysis tool against audio files of known weapon firings. Deployed the portable MANPADS	7.075	8.054	7.449

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603122D8Z: *Combating Terrorism Technology Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
pre-launch detection for operational evaluation. Installed the networked vehicle anti-tamper system on a variety of tactical response vehicles and evaluate monitoring and alerting capabilities. Demonstrated the effectiveness of window tinting system in a standalone window. Developed a personal security vulnerability assessment (PSVA) software tool to facilitate PSVA development aiding in determining need, scope and size of required protection. Researched and developed behind armor blunt trauma injury thresholds using the canine physiology, apply the developed criteria to develop an armor solution for working canines. Developed a tool to assess total body deformation during a low rate loading event. ***FY 2011 Plans:*** Deploy the protective services portal training system at federal law enforcement training centers and deploy the standalone protective services portal. Deploy the PSVA tool on a government sponsored site for use by all government protective details. Test and certify the canine armor system for use by military working dogs. Incorporate the total body deformation tool and analysis in the development of protective solutions for vehicles, ships, and buildings. Test and validate the emergency response capabilities of alternative fuel vehicles. Develop a novel multi-threat concealable body armor system. Install the window tinting system in an armored passenger vehicle and assess improvements in information security and reduction in focused attack accuracy. Develop a new test device to determine behind armor blunt trauma of body armor systems. Deploy the high-risk personnel tracking and locating system domestically and overseas. Research and develop a new limit for the backface signature limit, to reduce behind armor blunt trauma injuries. Deliver a tactical survey system for managing crisis situations and improving emergency response and preparations at critical installations. Deliver a program of instruction that enables tactical operators to develop and sustain human networks for enduring operations. Deliver a low-profile gunshot localization system that will enhance the situational awareness and survivability of tactical forces. ***FY 2012 Plans:*** Test and certify the canine armor system for use by military working dogs. Deploy the protective services portal training system at federal law enforcement training centers and deploy the stand-alone protective services portal. Incorporate the total body deformation tool and analysis in the development of protective solutions for vehicles, ships, and buildings. Deploy systems to enhance situational awareness, intelligence collection capabilities, and personnel recovery efforts. Test and validate the performance of multi-threat concealable body armor. Develop a system for vehicle protection in crowds. Incorporate the result of the backface signature limit research to a new injury standard for the evaluation of body armor. Develop a mobile surveillance platform that captures, records, encrypts, and streams multi-channel video and audio with associated GPS position information.			
Title: Advanced Analytics and Concepts ***Description:*** New Sub-group developed based on reprogramming action.	9.400	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603122D8Z: *Combating Terrorism Technology Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: FY 2010 Accomplishments: New program being developed using FY10 Reprogramming Funds. Funds received the first week of October. ***FY 2011 Plans:*** FY 2011 Plans: Develop and apply new models and tools that improve "sense-making" from complex data streams. Develop, apply, and deploy analytic platforms and tools that fuse a variety of data sources, tools, and models (including socio-cultural dynamic models) into advanced analytical systems used by interagency Intel and operational communities at the strategic, operational, and tactical levels. Support sustained tactical operations through development and fielding of enhanced layered defensive capabilities by anticipating and avoiding threats through understanding the cyber situation, anticipating adversarial actions, assessing potential impacts, and by implementing defensive methodologies. Develop interagency tactical solutions not addressed in national cyber-defense programs Develop field-capable technologies that enable training and/or mission rehearsal of adaptive skills that includes cultural understanding, interpersonal communication, and teamwork while effectively utilizing state-of-the-art advanced analytic systems.			
Accomplishments/Planned Programs Subtotals	88.661	85.299	77.019

	FY 2010	FY 2011
Congressional Add: Full Scale Impact and Blast Loading Laboratory Testing Program ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Improved LAS Glass-Ceramic Laminated Amored Window Systems ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Machine Augmented Composite Armor ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Validation of an Enhanced Urban Air Blast Tool ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Bioterriorism Operations Policy for Public Emergency Response (BOPPER) ***FY 2010 Accomplishments:*** Continued effort in method development and testing in support of bioterrorism operations and public health preparedness.	1.000	-
Congressional Add: Robotic Mobility Platform System	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603122D8Z: *Combating Terrorism Technology Support*

	FY 2010	FY 2011
FY 2010 Accomplishments: N/A		
Congressional Add: Port and Hull Securtiy 3D, Real Time Sonar System Echoscope ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Tactical Biometric Operating and Surveillance system (TBOSS) ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Biometric Terrorist Watch-List Database Management Development ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Covert Sensing and Tagging System (CSTS) ***FY 2010 Accomplishments:*** Continued effort to developed data fusion algorithms to improve detection automation and classification performance for tagging system.	1.200	-
Congressional Add: Document and Media Search and Discovery (DMSD) ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: EDIT Technology for Counter-Tunnel Operations and Cache Detection ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Facial Recognition Technology Initiative ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Remote Sensor Network Services Platform ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Low Cost Stabilized Turret ***FY 2010 Accomplishments:*** Continued effort to provide light weight, low cost solutions for airborne autonomous surveillance systems.	0.800	-
Congressional Add: Roll-on Roll off Reconnassanice, Surveillance & Special Mission Palletized System ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Ultra Portable Unmanned Surveillance Helicopter	-	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

	FY 2010	FY 2011
FY 2010 Accomplishments: N/A		
Congressional Add: Unmanned Aerial Vehicle Avionics Upgrade (UAVAU) ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: SOF Unattended Sensor Network ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Radio Inter-Operability System (RIOS) ***FY 2010 Accomplishments:*** Continued effort to developed a capability to provide radio gateways between military and civilian communications centers.	1.600	-
Congressional Add: CTTSO/STAR-TEC Partnership Program ***FY 2010 Accomplishments:*** N/A	-	-
Congressional Add: Facility Security Using Tactical Surveys ***FY 2010 Accomplishments:*** Developed a tactical survey system for managing crisis situations and improving emergency response and preparations at critical installations. Develop a program of instruction that enables tactical operators to develop and sustain human networks for enduring operations. Developed a low-profile gunshot localization system that will enhance the situational awareness and survivability of tactical forces.	3.600	-
Congressional Add: Military/Law Enforcement Counterterrorism Test Bed ***FY 2010 Accomplishments:*** Continued efforts in improved surveillance, detection, and use of Law Enforcement Capabilities to enhance the nation's law enforcement and military and counter-terrorism capabilities.	2.400	-
Congressional Add: Affordable Robust Mid-Sized Unmanned Ground Vehicle ***FY 2010 Accomplishments:*** New program that is being developed in the Improvised Device Defeat Sub-group	1.600	-
Congressional Add: Comprehensive and Integrated Procedures for Risk Assessment and Resource Allocation ***FY 2010 Accomplishments:*** New program that is being is just being developed for execution in late FY 2010.	2.000	-
Congressional Add: Integrated Rugged Checkpoint Container ***FY 2010 Accomplishments:*** New program that is being developed in the Tactical Operations Support Sub-group	2.000	-
Congressional Add: Ultra Low Profile EARS Gunshot Localization System	1.200	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

	FY 2010	FY 2011
FY 2010 Accomplishments: New program that is being developed in the Tactical Operations Support Sub-group		
Congressional Add: Remote VBIED Dection and Defeat System ***FY 2010 Accomplishments:*** New program that is being developed in the Improvised Device Defeat Sub-group	1.200	-
Congressional Add: Dynamic Data Flow Management System ***FY 2010 Accomplishments:*** New program that is being developed in the Surveillance, Collection and Operations Support Sub-group.	1.600	-
Congressional Add: Emergency Egress System ***FY 2010 Accomplishments:*** New program that is being developed in the Personnel Protection Sub-Group	1.600	-
Congressional Add: Expeditionary Surveillance and Reconnaissance Program ***FY 2010 Accomplishments:*** New program that is being developed in the Surveillance, Collection and Operations Support Sub-group.	4.000	-
Congressional Add: IdentClarity-Identity Resolution ***FY 2010 Accomplishments:*** New program that is being developed in the Surveillance, Collection and Operations Support Sub-group.	1.440	-
Congressional Add: MARCENT Thermal Imaging Suite ***FY 2010 Accomplishments:*** New program that is being developed in the Surveillance, Collection and Operations Support Sub-group.	3.000	-
Congressional Add: Omni Directinal Relay and Conformal Antenna ***FY 2010 Accomplishments:*** New program that is being developed in the Surveillance, Collection and Operations Support Sub-group.	2.500	-
Congressional Add: Reconnaissance and Data Exploitation (REX) System ***FY 2010 Accomplishments:*** New program that is being developed in the Surveillance, Collection and Operations Support Sub-group.	3.500	-
Congressional Adds Subtotals	36.240	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603122D8Z: *Combating Terrorism Technology Support*

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

Not applicable for this item.

F. Performance Metrics

Long Term Strategies: Obtain adequate funding to support critical shortfalls; prioritize proposals that are deemed acceptable and allocate funding accordingly; establish outreach programs with the interagency to leverage institutional knowledge and expertise; utilize cooperative research and development (R&D) agreements with the United Kingdom, Canada, Israel, Singapore, and Australia to leverage technology investments.

Performance Indicator and Rating:

FY 2010 Target:
70% of currently funded research projects are completed on time
5% increase in the number of projects transitioning to operational use
Continue full R&D programs with existing and new foreign partners

Verification: The CTTS Program utilizes a database to track the status of the projects. Quarterly program reviews are conducted to assess project status. In addition, an annual report is produced that assesses the status of current projects and the ability to accept new projects.

Validation: Completed research products increase the capabilities of the DoD to effectively detect, deter, and defend against terrorist attacks; thus the Departments personnel and interests at home and abroad are safer from terrorism.

FY 2011 Target:
70% of currently funded research projects are completed on time
5% increase in the number of projects transitioning to operational use
Continue full R&D programs with five existing foreign partners

Verification: The CTTS Program utilizes a database to track the status of the projects. Quarterly program reviews are conducted to assess project status. In addition, an annual report is produced that assesses the status of current projects and the ability to accept new projects.

Validation: Completed research products increase the capabilities of the DoD to effectively detect, deter, and defend against terrorist attacks; thus the Departments personnel and interests at home and abroad are safer from terrorism.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	3.154	6.808	7.903	-	7.903	3.859	3.945	4.383	4.463	Continuing	Continuing
P208: *Joint Interoperability*	-	2.488	2.134	-	2.134	2.068	2.115	2.349	2.392	Continuing	Continuing
P209: *Math Program*	-	-	4.000	-	4.000	-	-	-	-	Continuing	Continuing
P211: *Joint Interoperability Technology Development*	-	-	1.769	-	1.769	1.791	1.830	2.034	2.071	Continuing	Continuing
P202: *Joint Advanced Concepts*	2.062	2.287	-	-	-	-	-	-	-	Continuing	Continuing
P203: *Joint Electronic Warfare*	1.092	2.033	-	-	-	-	-	-	-	Continuing	Continuing

Note

The PE title has changed from "Joint Advanced Concepts" to the new title of "Joint Interoperability Technology Development."

A. Mission Description and Budget Item Justification

This effort will investigate new concepts and technologies that fill critical warfighter needs with joint and interoperable systems at all echelons of warfare. Through advanced mathematics and engineering methodologies, the Joint Interoperability Directorate will work to institutionalize joint interoperability concepts throughout the DoD to ensure reduced fratricide, increased force effectiveness, and decreased taxpayer cost through fully interoperable weapons remains a focus throughout the acquisition/program development processes. Working closely with programs in the advanced technology development phase, this effort will result in reviews of program technology feasibility from an interoperability perspective and push to proof of concept through prototyping and modeling.

Based on recent DDR&E reorganization, the requirements of the Joint Interoperability program have grown and evolved to cover areas beyond what they had been previously. Joint Interoperability now has additional efforts to review new technology, to develop advanced mathematics techniques to manage of large volumes of sensor data to solve DoD Battlefield challenges, and to review program documentation not only to ensure a joint and interoperable approach but also to mature technologies that advance warfighter effectiveness and that apply technology rapidly to battlespace challenges.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	7.817	6.808	6.901	-	6.901
Current President's Budget	3.154	6.808	7.903	-	7.903
Total Adjustments	-4.663	-	1.002	-	1.002
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.600	-			
• SBIR/STTR Transfer	-0.118	-			
• Other Program Adjustments	-3.945	-	-	-	-
• DDR&E Baseline Review	-	-	1.697	-	1.697
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.216	-	-0.216
• Defense Efficiency - Contractor Staff Support	-	-	-0.468	-	-0.468
• Economic Assumptions	-	-	-0.011	-	-0.011

Change Summary Explanation

Due to reorganization within OUSD(AT&L) The Joint Advanced Concepts (JAC) office was closed and the Joint Interoperability Functions that were a part of the JAC mission have been moved to the Director, Defense Research and Engineering (DDRE).

DDR&E Baseline Review. DDR&E implemented a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions resulting in an increase of $1.697M for the Math Program and other initiatives.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*	PROJECT P208: *Joint Interoperability*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P208: *Joint Interoperability*	-	2.488	2.134	-	2.134	2.068	2.115	2.349	2.392	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Director, Joint Interoperability provides oversight and guidance to initiatives and programs that support the joint tactical warfighter to enable reduced fratricide, increased force effectiveness, and decreased taxpayer cost through fully interoperable weapons systems, down to the tactical level of engagement. Joint interoperability is the force multiplier that will enable our warfighters to fight jointly, be more efficient and effective in the battlespace and allow warfighters to fight in the battle and not the tactical C3 displays. Sharing of systems and information across Services, and with coalition and non-DoD partners, has the benefit of a more rapid and better coordinated response to an ever more agile adversary. It also enables the full exploitation of our costly (legacy and future) weapon systems at full kinematic range and makes full use of the assets in theater. The taxpayers also benefit from reducing the cost of weapon system procurement by paying once vs. multiple times for weapons systems that are used by Services in the battlespace.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Interoperability	-	2.488	2.134
Description: • Chair the Combat Identification (CID) Defense Support Team to improve Joint Interoperable CID capability. • Identify Friend or Foe (IFF) M5 Technology Synchronization. • IFF M5 North Atlantic Treaty Organization (NATO) Interoperability and technology export. • Co-chair Joint Cooperative Target Identification–Ground (JCTI-G) Overarching Integrated Process Team (OIPT). • Personnel Recovery – DAMA-C lead w/Defense Information Systems Agency (DISA), Services, & Joint Staff; Interoperability of personnel recovery equipment. • Blue Force Tracking – Device Interoperability; Single Card Solution program and RF Patch program technical oversight. • Sensor Signatures Oversight. • Interoperability Commission (IOC). – US Chair for CID bilateral w/United Kingdom (UK). – US Chair for Joint Fires bilateral w/UK. • Digital Joint Close Air Support – Lead for AT&L – interoperability technology. • Net Centric (NC), Battlespace Awareness (BA), and Command & Control (C2) FCB and Working Group support. • Address policies and procedures used to ensure net-centric joint interoperability. • Model Driven Architecture exploitation in DoD. • Oversight of net-enabled Interoperability technologies. • Lead technology development for an All Domain Tactical Picture.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*	PROJECT P208: *Joint Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Perform Capability Development Framework (CDF) Interoperability Assessments for critical capability areas (i.e. Base Protection and C4ISR) ***FY 2011 Plans:*** • Chair the Combat Identification (CID) Defense Support Team to improve Joint Interoperable CID capability. • Identify Friend or Foe (IFF) M5 Technology Synchronization. • IFF M5 North Atlantic Treaty Organization (NATO) Interoperability and technology export. • Co-chair Joint Cooperative Target Identification–Ground (JCTI-G) Overarching Integrated Process Team (OIPT) • Personnel Recovery – DAMA-C lead w/Defense Information Systems Agency (DISA), Services, & Joint Staff; Interoperability of persnonel recovery equipment • Blue Force Tracking – Device Interoperability; Single Card Solution program and RF Patch program technical oversight. • Sensor Signatures Oversight. • Interoperability Commission (IOC). – US Chair for CID bilateral w/United Kingdom (UK). – US Chair for Joint Fires bilateral w/UK. • Digital Joint Close Air Support – Lead for AT&L – interoperability technology. • Net Centric (NC), Battlespace Awareness (BA), and Command & Control (C2) FCB and Working Group support. • Address policies and procedures used to ensure net-centric joint interoperability. • Model Driven Architecture exploitation in DoD. • Oversight of net-enabled Interoperability technologies. • Lead technology development for an All Domain Tactical Picture. • Perform Capability Development Framework (CDF) Interoperability Assessments for critical capability areas (i.e. Base Protection and C4ISR) ***FY 2012 Plans:*** • Chair the Combat Identification (CID) Defense Support Team to improve Joint Interoperable CID capability. • Identify Friend or Foe (IFF) M5 Technology Synchronization. • IFF M5 North Atlantic Treaty Organization (NATO) Interoperability and technology export. • Co-chair Joint Cooperative Target Identification–Ground (JCTI-G) Overarching Integrated Process Team (OIPT). • Personnel Recovery – DAMA-C lead w/Defense Information Systems Agency (DISA), Services, & Joint Staff; Interoperability of personnel recovery equipment • Blue Force Tracking – Device Interoperability; Single Card Solution program and RF Patch program technical oversight. • Sensor Signatures Oversight.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*	**PROJECT** P208: *Joint Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Interoperability Commission (IOC). – US Chair for CID bilateral w/United Kingdom (UK). – US Chair for Joint Fires bilateral w/UK. • Digital Joint Close Air Support – Lead for AT&L – interoperability technology. • Net Centric (NC), Battlespace Awareness (BA), and Command & Control (C2) FCB and Working Group support. • Address policies and procedures used to ensure net-centric joint interoperability. • Model Driven Architecture exploitation in DoD. • Oversight of net-enabled Interoperability technologies. • Lead technology development for an All Domain Tactical Picture. • Perform Capability Development Framework (CDF) Interoperability Assessments for critical capability areas (i.e. Base Protection and C4ISR)			
Accomplishments/Planned Programs Subtotals	-	2.488	2.134

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Not applicable for this item.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*	PROJECT P209: *Math Program*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P209: *Math Program*	-	-	4.000	-	4.000	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

Advances in mathematics must be applied to DoD systems in order to provide a common tactical picture for real-time, tactical operations with near-term potential for application to solve the Department's most pressing operational problems. They will develop novel approaches to implement non-classical methods to solve computationally intensive problems like fusing numerous sensors that are generating terabytes of data in Afghanistan. Our ability to sense has far exceeded our ability to process data into information. Developing algorithms that are more computationally efficient at discerning information from large datasets will place smaller demands on our limited bandwidth and better enable the disadvantaged user to get information down to the tactical level. This effort includes tests against recorded live data to demonstrate relevance to identified military needs. This effort will develop advanced mathematical software algorithms and components in DoD-relevant areas such as topological evaluation and visualization of massive and high dimensional data sets, topological data analysis, and enhanced data extraction and filtering and fusion algorithms

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Math Program	-	-	4.000
FY 2012 Plans: Contract awards for this effort are expected in FY11 using below threshold reprogramming funds. Efforts selected to continue in the FY12 Option year will be based on their performance and relevance to military needs based on their demonstrations performed in CY11. Prior Accomplishments: Contract award for this effort is expected in FY11. Accomplishments will be demonstrated by the end of CY11.			
Accomplishments/Planned Programs Subtotals	-	-	4.000

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*	**PROJECT** P209: *Math Program*

E. Performance Metrics

Successful demonstration using Bluegrass data NTL December 2011 (FY12) of either 1) Creating the elements of a common tactical picture in the low/slow air and ground domain, 2) Optimizing Sensor Placement and Management, depending on which challenge problem is being addressed. Subsequent option years will continue to measure against those metrics.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*	PROJECT P211: *Joint Interoperability Technology Development*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P211: *Joint Interoperability Technology Development*	-	-	1.769	-	1.769	1.791	1.830	2.034	2.071	Continuing	Continuing

A. Mission Description and Budget Item Justification

Based on recent Director, Defense Research and Engineering (DDR&E) reorganization, the requirements of the Joint Interoperability program have grown and evolved to cover areas beyond what they had been previously. Joint Interoperability removes barriers to communication and acts as a force multiplier to enable our warfighters to fight more efficiently and effectively across the spectrum of operations and is focused on maturing technologies that advance warfighter effectiveness and that apply technology rapidly to battlespace challenges. Examples of the types of projects that are envisioned under this Program Element will focus on reducing fratricide, increasing force effectiveness, and reducing major acquisition program costs through fully interoperable weapons systems operating at tactical levels. Typically these projects are on the technology maturity scale where an idea or technology opportunity is proven and demonstrated.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Interoperabiltiy Technology Development	-	-	1.769
FY 2012 Plans: It should be noted that the Joint Interoperability Technology Development funded projects are to be selected to address emergent needs and fill technology gaps. There are no specific projects identified at this time; however, FY 2012 plans include continuing to identify and fund new projects that are best equipped to respond to critical operational needs and new technology opportunities.			
Accomplishments/Planned Programs Subtotals	-	-	1.769

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Not applicable for this item.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*	PROJECT P202: *Joint Advanced Concepts*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P202: *Joint Advanced Concepts*	2.062	2.287	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

Acquisition reform initiatives call for top down, national security strategy-driven capabilities-based planning. The Joint Advanced Concepts (JAC) program supports acquisition reform initiatives and early capabilities based strategic investment decisions that ensure joint, integrated, interoperable, system-of-system combat capability to the warfighter. Through a systematic and thorough process, including comprehensive technology assessments, net technical assessments that engage in comparative analysis of U.S. versus non-U.S. capabilities, the program will better inform early shaping of acquisition programs, to include Special Access Programs, from a capabilities portfolio management perspective to deliver improved capabilities to the current and future joint warfighter. This shaping is supported through capability-based assessments, requirements analysis, joint capability area assessments, integrated roadmap development, and the development/integration of risk-based collaborative tools to conduct capability-based assessments. These efforts were previously funded under PE0604875D8Z, Joint Systems Architecture Development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Advanced Concepts	2.062	2.287	-
FY 2010 Accomplishments: This project supported focus areas in portfolio management and activities associated with our program evaluation responsibilities providing for early shaping of Pre-Milestone A programs. Provided early shaping of Department-wide portfolio based investment decisions, development, coordination and institutionalization of enterprise wide Business Rules and procedures for investment strategies and resource balancing, integration of the requirements process with the acquisition process to bridge our military and civilian areas of responsibility with all Combatant Commands (COCOMS), Services and Agencies. Provided the Deputy Secretary of Defense and DoD Components advice on how to maximize capability investment to meet warfighter needs. Led the development of integrated capability roadmaps, and supported acquisition program reviews and Guidance for Development of the Force. Represented Acquisition, Technology & Logistics (AT&L) interests in requirements for future acquisition systems. Develops and updates capability roadmaps to inform decision makers for portfolio investment decisions, DoD Requirements and POM decisions. Beginning in FY 20110, Director, Joint Interoperabilty efforts will be transferred to a new Project (P208) within this Program Element.			
FY 2011 Plans: This project supports focus areas in portfolio management and activities associated with our program evaluation responsibilities providing for early shaping of Pre-Milestone A programs. Provide early shaping of Department-wide portfolio based investment			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*	PROJECT P202: *Joint Advanced Concepts*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
decisions, development, coordination and institutionalization of enterprise wide Business Rules and procedures for investment strategies and resource balancing, integration of the requirements process with the acquisition process to bridge our military and civilian areas of responsibility with all COCOMS, Services and Agencies. Provides Deputy Secretayr of Defense and DoD Components advice on how to maximize capability investment to meet warfighter needs. Leads the development of integrated capability roadmaps, and supports acquisition program reviews and Guidance for Development of the Force. Represents A&T interests in requirements for future acquisition systems. Develops and updates capability roadmaps to inform decision makers for portfolio investment decisions, DoD Requirements and Program Objective Memorandum (POM) decisions.			
Accomplishments/Planned Programs Subtotals	2.062	2.287	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Not applicable for this item.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*	PROJECT P203: *Joint Electronic Warfare*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P203: *Joint Electronic Warfare*	1.092	2.033	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

Provides funding for Joint Electronic Warfare (EW) initiatives and EW assessments. The EW Joint Analysis Team (JAT) (established in November 2007) fills a void identified by the Combatant Commanders for a group to coordinate the disparate EW activities across the Department. Provides funding to the EW JAT for stablishing the Joint Electronic Warfare Center (JEWC) as the executive agent for coordination between Combatant Commanders, Services, Office of Secretary of Defense, Joint Staff, Weapon Schools, Technology Centers, Academia and Developmental Test and Evaluation (DT&E) organizations. Provides for EW exploitation analysis of the inter-relational effects of combined-systems evaluations in mission area needs in such domains as Integrated Air and Missile Defense, Blue Force Identification, Nettedsensors and Command and Control. The program will further work with the Joint Staff in developing a comprehensive, holistic EW architecture.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Electronic Warfare	1.092	2.033	-
FY 2010 Accomplishments: This project supported Joint Electronic Warfare Center Support to the Electronic Warfare Joint Analysis Team as the conduit between Combatant Commanders, who determine EW Requirements, and the EW JATs analytical team. Performed comparative analysis to determine blue force operations throughout the Electro-Magnetic Spectrum, determined adversary technology trends, provided modeling, analysis, and simulation expertise for concept testing and validation, and provided objective oversight of field testing to ensure real world dynamics are considered. This analysis assessed asymmetric strengths and weaknesses, as well as how Electronic Warfare (EW) interacted with other warfighting areas. It drew upon combined-systems evaluation events geared to mission area needs in such domains as Integrated Air and Missile Defense, Blue Force Identification, Netted-sensors and Command and Control. The project supported the Joint Staff effort to develop a comprehensive, holistic plan for EW.			
FY 2011 Plans: . Develop products and processes that enhance DoD understanding of how U.S. EW technology advances are matching up with global technology proliferation and next generation weapons. - Expand State of EW baseline capabilities reference materials and produce Strategy and Roadmap development. - Develop technical products and databases to allow comprehensive campaign analysis. - Develop EW Report to Congress - Produce authoritative, EW specific budget summaries and databases. . Create mechanism to auto-populate and auto-update improving data quality and timeliness for shared information awareness. - Advance Service and COCOM Mechanisms for EW Planning, Requirements Definition, Testing and Training. . Broaden efforts to develop an authoritative on-stop library of EW Capabilities.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603200D8Z: *Joint Interoperability Technology Development (Formerly Joint Advanced Concepts)*	**PROJECT** P203: *Joint Electronic Warfare*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
. Engage with DOTE and TRMC on the rate of test limitation growth in EW testing and investigate options for technology solutions. . Participate with Air Combat Command initiative to advance non-kinetic technologies and to re-introudce live EW training into RED FLAG exercises. - Lead implementation FY11 Technology Task recommendations.			
Accomplishments/Planned Programs Subtotals	1.092	2.033	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Not applicable for this item.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	21.462	22.700	20.372	-	20.372	20.681	20.617	21.587	21.292	Continuing	Continuing
P225: *Joint DOD/DOE Munitions*	21.462	22.700	20.372	-	20.372	20.681	20.617	21.587	21.292	Continuing	Continuing

A. Mission Description and Budget Item Justification

The mission of the Department of Defense (DoD)/Department of Energy (DOE) Joint Munitions Technology Development Program (JMP) is to develop new and innovative warhead, explosive, fuzing, and lifecycle technologies and tools to enable major improvements in non-nuclear munitions. The JMP supports the development and exploration of advanced munitions concepts and enabling technologies that precede Service-specific system engineering. A Memorandum of Understanding signed in 1985 by DoD and DOE provides the basis for the cooperative effort and for cost-sharing the long-term commitment to this effort. The JMP funds budgeted in this justification are matched dollar for dollar by DOE funds. Through this interdepartmental cooperation, DoD's relatively small investment leverages DOE's substantial investments in intellectual capital and highly specialized skills, advanced scientific equipment and facilities, and computational tools not available within DoD. Under the auspices of the JMP, the integration of DOE technologies with Joint and Individual Services' needs has provided major advances in warfighting capabilities over many years and continues to play a crucial role in the exploration, development, and transition of new technologies needed by the Services.

The JMP seeks to develop: improved modeling and simulation tools for munitions design and evaluation, including evaluation of vulnerability (i.e., design of insensitive munitions (IM)); novel experimental techniques and material property databases to support modeling and simulation; higher power and safer explosives and propellants; miniaturized, lower-cost, and higher reliability fuzes, initiators, power systems, and sensors; design tools to enable development of higher performance warheads and weapons—such as penetrators—that are hardened against high impact loads; and tools to assess the health and reliability of the munitions stockpile and predict lifetimes based on these assessments.

The JMP is aligned with Department strategic plans and policies such as:

– Munitions for contingency operations, particularly for the reduction of unintended collateral effects
– Reducing time and cost for acquisition of munitions
– Rapidly transitioning science and technology (S&T) to support the warfighter in today's conflicts
– Establishing future core capabilities and maintaining our national S&T capabilities through joint investment and interagency cooperation and teaming
– Aiding in recruiting and retaining high-caliber scientists and engineers at DoD S&T organizations
– Developing advanced munitions technologies to support the increased role of conventional weapons to deter and respond to non-nuclear attack, as described in the Nuclear Posture Review report
– Developing safer munitions that are compliant with IM standards to meet statutory and Department policy requirements

The JMP has established a successful collaborative community of DoD and DOE scientists and engineers. This community develops technologies of interest to both Departments within a structured framework of technical reviews and scheduled milestones. The JMP is administered and monitored by the Office of the Secretary of Defense (OSD) and reviewed annually by the Technical Advisory Committee (TAC), which is comprised of over 25 senior executives from the Army, Navy, Air Force,

Special Operations Command, the Defense Threat Reduction Agency, OSD, and DOE. Projects are organized in nine Technology Coordinating Groups (TCG) that bring together the disciplines necessary to properly evaluate technical content, relevance, and progress. The TCG conduct semi-annual technical peer reviews of JMP projects and plans. DoD Service laboratory technical experts lead each of the TCG to ensure that the technologies under development address high-priority DoD needs. The JMP also promotes more in-depth technical exchange via short-term visiting scientist and engineer assignments at both the DOE and the DoD laboratories.

The JMP has a long history of successful transitions and significant Return on Investment (ROI).

– The JMP is the primary provider of high performance structural mechanics computer codes used by DoD. According to the FY 2010 High Performance Computing Modernization Program Requirements Analysis Report, the DOE computer codes are used for over 90% of all (classified and unclassified) structural mechanics simulations and for virtually all of the classified calculations run by DoD. The Department expects this heavy reliance on DOE codes to grow for several reasons including: preference for using DOE codes because they are export-controlled; DOE codes are scalable, incorporate multiphysics, and run on massively parallel computer systems; and the Department can obtain source codes to modify for individual Service needs.
– A significant number of defense industrial contractors also use the DOE structural mechanics computer codes.
– CHEETAH, a standalone thermochemical computer code, is the most widely used code by DoD and defense contractors for predicting performance of energetic materials.
– The Army Research & Engineering Development Center (ARDEC) has stated that the DOE computer codes are now routinely used to design all new warheads. The use of these tools has reduced the number of validation tests required for each new warhead from about 5 to 1 with concomitant cost and time savings.
– The Army Research Laboratory has used DOE computer codes to develop and deploy new armor solutions to Iraq and Afghanistan with unprecedented speed.
– New munitions' case material and explosive fill technologies provide the warfighter with a lethal and low collateral damage capability. These technologies have been transitioned to the Focused Lethality Munition variant of the Small Diameter Bomb, which is currently fielded. The technologies are also the basis for a new Precision Lethality Mk-82 weapon that is currently under rapid development to meet a Joint Urgent Operational Need requirement for a low-collateral Mk-82 class weapon.
– The Joint Improvised Explosive Device Defeat Organization (JIEDDO) has supported applications of JMP technologies, including: compact synthetic aperture radar (SAR) systems for counter-IED efforts; pre-deployment training of military personnel by DOE explosive experts on how to recognize feed stocks and processes for homemade explosives; and use of massively parallel, multiphysics computer codes to understand how explosive blast waves cause brain injury and how these injuries could be mitigated.
– An erosive initiator technology developed under the JMP has been transitioned to the Services for use in selectable output weapons and self-destruct capabilities.
– A novel approach to controlling the sensitivity and therefore the initiative of explosives using microwave energy, as well two new, insensitive energetic materials have transitioned to development projects in the Joint IM Technology and Joint Fuze Technology Programs.
– Reliability analysis tools were used by Army Missile Command to assess RAM, AMRAAM, and TOW.
– Robotic demilitarization processing systems were installed at several locations, including a system at Hawthorne Army Depot to recover copper shape charge liners, Comp A5, and grenade bodies.

The JMP also works with the Defense Ordnance Technology Consortium (DOTC) and the National Warheads and Energetics Consortium (NWEC) of industrial suppliers to equitably and efficiently transition JMP technologies to defense industrial contractors. In addition to the computer codes mentioned earlier, the JMP has

transitioned case technology for low-collateral weapons, low-temperature co-fired ceramic technology for smaller, less expensive fuze electronic components, and erosive initiator technology for selectable effects weapons to defense industrial suppliers.

The integrated DoD and DOE efforts within the JMP are transitioning new munitions' technologies to the Department and the defense industrial base through the advanced development process. The JMP is a focal point for collaborative work by nearly 300 DoD and DOE scientists and engineers. Technical leaders from both Departments consider the JMP a model of cooperation, both within their respective departments and between departments. The highly challenging technical objectives of the approximately 35 JMP projects require multi-year efforts and sustained, long-term investments to achieve success.

The JMP projects are divided into five technical focus areas: Computational Mechanics and Material Modeling; Energetic Materials; Initiators, Fuzes, and Sensors; Warhead and Penetration Technology; and Munitions Lifecycle Technologies.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	23.276	22.700	22.926	-	22.926
Current President's Budget	21.462	22.700	20.372	-	20.372
Total Adjustments	-1.814	-	-2.554	-	-2.554
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.691	-			
• Defense Efficiency - Baseline Review	-	-	-2.000	-	-2.000
• Other Program Adjustments	-1.123	-	-	-	-
• Defense Efficiency - Reports, Boards, Studies, and Commissions	-	-	-0.525	-	-0.525
• Economic Assumptions	-	-	-0.029	-	-0.029

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of studies below the aggregate level reported in the previous budget submission.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Computational Mechanics and Material Modeling	7.941	8.617	7.592

Description: Projects in this technical focus area develop computational tools, material models, and calibration and validation databases which support the design and development of weapon systems. These capabilities are intended to predict complex phenomena across significant length (meso to continuum) and time (microsecond to minute) scales. The tools provide coupled, multi-physics and chemistry modeling capability that are scalable to massively parallel architectures for solving very diverse problems across the weapons systems' research and development and acquisition communities. Numeric tools are the foundation that makes possible the integration of mechanics, materials science, physics, and chemistry. This focus area also includes an extensive experimental component consisting of phenomenological or "discovery" experiments that drive model development; calibration experiments to compliment models; and validation experiments for model and code validation.

The specific projects in computational mechanics and material modeling are:

– CTH, SIERRA code & model development and experiments
– Arbitrary Lagrangian-Eulerian (ALE3D) code & model development and experiments
– DUNE granular flow model development
– Composite case technology and modeling
– Near-field lethality modeling
– Dynamic properties of weapon materials
– Energetic materials and polymers under dynamic and thermal loading
– Fragment impact and response experiments
– Thermal battery performance modeling

FY 2010 Accomplishments:
– CTH Eulerian shock physics hydrocode version 10 released with upgrades in material interface, energy conservation, number of materials, and GUI installer
– Arbitrary Lagrangian-Eulerian Three Dimensions (ALE3D) version 4.12 released with upgrades including: spiral 1 autocontact, 2D detonation shock dynamics, material parameter database, and corner theory yield surface model
– Developed thermal and finite deformation damage models for composite laminates in ALE3D
– Verified and validated shock focusing in DUNE 2D hydrodynamic-structural analysis
– Developed ViscoSCRAM model for plastic-bonded explosive (PBX) N9
– Characterized the strain-rate dependent mechanical properties of high-performance [rocket] propellant (HPP)
– Implemented a glassy polymer model into ALE3D
– Implemented two-component localization model into ABAQUS

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Developed dilatational viscoplastic self-consistent model – Developed improved soil material model – Incorporated improved mixture theory-based reactive flow model into CTH – Tested and analyzed the reactive response of heated explosive composites ***FY 2011 Plans:*** – Develop 3D boundary detonation shock dynamics in ALE3D – Implement implicit shells and enhanced tensile plasticity (TEPLA) damage model in ALE3D – Implement finite strain capability for composite damage and temperature-dependent composite properties in ALE3D – Incorporate a coupled yield-damage surface for use in macroconstitutive models – Complete engineered instability and mixed-mode fracture experiments – Develop a rubbery polymers constitutive model – Complete characterization and constitutive model development for rubber insulating materials in rocket motors – Refine next generation high explosive constitutive model – Implement rubber model into ALE3D – Complete PBX-N9 Taylor impact and damage studies – Conduct impact test series on PBX 9501 energetic material – Develop composite plate/shell model – Develop extended finite element method (XFEM) capability for fragmentation problems – Demonstrate mixed FEM capability to remove mesh dependency for localization problems – Release 1D electrochemical model for isothermal, constant rate discharge in thermal batteries – Develop composite micromechanics models for anisotropic equation of state (EOS) – Demonstrate mixed FEM capability to remove mesh dependency for a localization problem – Improve fragmentation simulation capability – Support for beams arbitrarily embedded in solids for modeling of reinforced structures – Expand X-FEM capabilities in SIERRA to include multiple interacting cracks for fragmentation environments – Develop a Predictor-Corrector approach for Fortissimo to improve accuracy of problems with similar impedance mismatches – Develop initial anisotropic composite model and implement into CTH and SIERRA codes ***FY 2012 Plans:*** – Deploy acoustic analysis capability for determining pressures in confined environments – Implement new statistical based models for reactive composite energetics in shock physics analysis – Damage characterization of HPP – Complete initial impact testing on pre-conditioned PBX 9501			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– For ALE3D: a. Implement spiral 1 embedded grids (shells) b. Develop improved statistical seeding c. Develop a thermal and chemical material model database d. Perform multiscale simulations to understand effect of void distribution on failure e. Add alloys to dislocation dynamics strength model – Compare advanced composite shell element against analytical solutions – Validate a two-component model for fragmentation for select materials – Incorporate reduced-order electrochemical model within SIERRA suite			
Title: Energetic Materials ***Description:*** The goals of this technical focus area are to develop new energetic materials (EM) and supporting technologies to satisfy the competing requirements for smaller, more lethal, and safer munitions. Work is primarily focused on explosives, gun and rocket propellants, and, to a lesser extent, pyrotechnics. The projects include development of: new EM, including new molecules in a range of particle size and morphologies; new EM formulations; a fundamental understanding of energetic properties and performance; and computational tools for analysis of performance and sensitivity. New materials and formulations are developed with the recognition that cost must be feasible, chemical feed stocks reliable, and manufacturing processes suitable for scale-up to production levels. Both federal statute and Department policy direct the development of safer, less sensitive munitions. Making munitions less sensitive while maintaining explosive or propellant performance is a difficult challenge. This goal is best attained through a combination of new EM development, EM characterization, and more sophisticated modeling and simulation tools. It is cost-prohibitive to qualify weapons for compliance with insensitive munitions requirements through testing alone. A better, in many cases the only means to qualify these weapons is with the combination of analysis based on validated computational tools and a few well-designed tests. The Department requires munitions that provide selectable effects. To achieve these effects, weapons designers need to thoroughly understand the performance of EM used in both the main weapon fill and the initiation systems. Distributed fuzing systems can provide selectable effects as well as safer munitions, but such complex small-scale systems require more complete knowledge of EM detonation physics and in, some cases, new EM designed for this application.	4.507	4.694	4.260

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The desire for smaller and lighter munitions is driven in large part by the increasing dependence on unmanned weapons platforms and to some extent by the need to reduce logistical burden, especially energy consumption. New EM are needed to meet the munitions weight and size requirements while maintaining lethality and safety. The Department is working to increase the range and velocity of weapons and to develop weapons against hardened targets. These applications subject the EM to high accelerations and shock loads. To support the development of these new systems, we need to improve our ability to model EM under impact loads and to characterize relevant properties to determine their ability to survive in these aggressive environments. We may also need to develop new, more robust EM that survive impact loads while maintaining lethality and initiability. The specific projects in the energetic materials technical focus area are: – Synthesis, properties, and scale-up of new energetic compounds – Insensitive munitions and surety – New energetic materials formulation and characterization – CHEETAH thermochemical code development and experiments – Multi-functional energetic materials – Micro- and nano-energetics synthesis and initiation – Hazards analysis of energetic materials – Reaction processes of energetic materials – Microfluidic reactor synthesis of sensitive explosives – Energetics chemistry and properties – Microstructural and kinetic effects on energetic materials behavior – Microwave sensitization and initiation of energetic materials ***FY 2010 Accomplishments:*** – Characterized slow cook-off response of ammonium perchlorate (AP), AP-based composite propellants, and PBX-9502 using Sandia Instrumented Thermal Indicator (SITI) test method – Developed a SITI for characterization of cook-off up to 550 C and applied test to high-temperature EM – Developed a simple model to describe pressure-dependent confined decomposition of explosives – Characterized effects of a high-nitrogen salt on the decomposition of RDX – Characterized interactions between IMX ingredients at low temperatures			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Characterized decomposition of guanidine nitrate and FOX-12 and their interactions with other ingredients in new gun propellants – Produced lead azide using a novel microfluidic continuous coaxial flow system – Released CHEETAH 6.0, which includes transport properties prediction and expanded Exp6-Polar products library – Imaged thermal explosion of PBX-9501 using HYDRA high-fidelity X-ray facility – Developed non-prompt ignition and burn model for low-velocity insults and implemented model in ALE3D – Developed and implemented a multiphase convective burn model in ALE3D – Provided several new energetic materials to DoD for evaluation: a. TAG salts of high-nitrogen compounds for gun propellants b. Energetic materials for biodegradation studies c. High-nitrogen compounds for rocket propellants – TAGzT solubility data provided to DoD for toxicology studies – Demonstrated application of microwave energy to increase sensitivity of booster-sized charge on a practical time scale using a reasonable amount of energy, established and investigated two mechanisms for sensitivity increase via application of microwaves – First laboratory-scale x-ray radiography of pre-ignition and thermal explosion experiment – Developed full kinetic model for thermal decomposition of HMX – Synthesized small-scale quantities of high-power, less sensitive explosives LLM-172 and -191 – Demonstrated new synthesis route for LLM-105 explosive, which could reduce production cost and improve production safety – Synthesized two new thermally stable insensitive EM, LLM-190 and -175, and two new high-nitrogen burn rate modifiers for gun propellants, LLM-182, and -181 – Provided ~100g quantities of multifunctional EM based on nickel and aluminum to DoD labs for evaluation – Completed fabrication of freeze-cast processing capability for multifunctional EM			
FY 2011 Plans: – Characterize HNAB (structure-processing relationships, critical thickness) for microenergetic systems – Demonstrate multi-point output in thin-film initiation systems – Transfer SITI test method to DoD labs – Develop correlations between thermal boundary conditions and cook-off violence using pre-ignition models – Determine validity of applying slow cook-off models to fast cook-off – Demonstrate ionic liquid recrystallization of triaminotrinitrobenzene (TATB) – Scale-up of LLM-105 DAPO process to 5 kg – Scale-up LLM-172, -190, and -175 syntheses to ~10-100g scale – Refine fracture models for HPP to simulate impact response			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Develop Spiral 1 multiphase convective burn model for HPP – Perform mesoscale modeling of energetic materials – Characterize damage and fracture of HPP – Perform shock initiation energetic materials under pressure to obtain parameters for the ignition and growth reactive flow model – Develop Spiral 1 kinetics model for HPP and other energetic materials to improve thermal response simulation – Determine the role of ignition volume, ignition point, pre-ignition state (pressure, temperature) on a specific explosive violence metric (e.g., case expansion velocity to develop post-ignition deflagration models – Perform thermal explosion imaging of insensitive explosive LLM-105 – Characterize the effect of thermal damage on HPP burn rate – For future release of CHEETAH: a. Validated Cheetah library for Cl, F, B, and Si products b. Develop thermal conductivity and viscosity model for solids c. Test and validate in-line Cheetah modules d. Complete sound speed measurements under pressure for acids, acid mixtures, and boron compounds – Thermal explosion imaging of LLM-105 at HYDRA X-ray facility – Formulate and characterize microwave sensitivity and performance of TATB-based energetic compositions designed to be sensitive to microwave irradiation – Further development of new insensitive energetic booster materials – Develop new synthetic routes for NNQAT and NNQBT (energy greater than HMX), new oxidizers, and new gun propellant additives – Conduct proton radiography experiments of HMX thermal decomposition and ignition – Freeze-cast inert and reactive materials			
FY 2012 Plans: – Demonstrate detonation transfer in deposited energetic films – Complete first phase of aging studies and material characterization of nano- and micro-energetic materials – Determine conditions necessary for propagation of reaction in fast cook-off – Complete initial results from applying reactive flow models for slow cook-off of new HPP – Release CHEETAH 7.0 with expanded equation of state capabilities for new materials – For future release of CHEETAH: a. Develop EOS models for new solids and liquids b. Develop kinetic models for liquid explosives c. Conduct ultra-fast shock measurements on PETN			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
d. Complete limited sound speed measurements under pressure for CO – Demonstrate ionic liquid recrystallization of LLM-105 – Complete synthesis of insensitive explosive LLM-175 – Develop Spiral 2 multiphase convective burn model for HPP – Develop Spiral 1 damage and failure model for HPP – Perform friability testing of HPP – Develop Spiral 2 HPP kinetics model – Model the scaled thermal explosion experiments with convective burn, fragmentation, and venting – Perform thermal response testing of pristine HPP – Implement full-scale kinetic model of HMX thermal decomposition and ignition into ALE3D and other large-scale, multi-physics computer codes. – Establish relationship between internal pressure and convective and conductive burn rates in PBX 9501 – Demonstrate laboratory scale dynamic X-ray capability for studying thermal decomposition and ignition of energetic materials. – Develop model in CTH to simulate pop-plot behavior of one variant of composite energetic material – Complete assessment of freeze-cast technique for fabrication of multifunctional EM			
Title: Initiators, Fuzes, and Sensors	4.078	4.247	3.854
Description: The goals of this technical focus area are to develop new materials, components, diagnostic techniques, and modeling and simulation tools for fuzing systems. Initiators, fuzes, and sensors must work reliably together to prevent unintended detonation, to correctly detect intended targets, and to initiate detonation when required. Projects in this focus area support the Department's needs to miniaturize fuzing systems. Smaller systems are required for several reasons including: compatibility with smaller and lighter weapons systems; trading volume in munitions for other components such as additional explosive, larger power sources, or guidance systems; increasing reliability through redundancy (use two or more smaller initiating systems); and upgrading existing sub-munitions with smarter and more reliable fuzing systems. The miniaturization of fuzing systems requires new material and components, new diagnostic techniques, and improved modeling tools for microdetonics. The Department also needs weapons systems with selectable effects and these effects can be achieved with multi-point initiation systems. Such systems are inherently more complex and require improved characterization of initiator materials and components as well as more sophisticated modeling and simulation tools. To attain greater precision and to avoid unintended collateral effects when weapons are used in the complex environment of counter-insurgency or counter-terrorist operations, target sensors must be reliable and provide high-fidelity discrimination. Two projects in this focus area are developing technologies to achieve this level of performance in compact packages.			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The specific projects in the initiators, fuzes, and sensors technical focus area are: – Firing systems technology: FireMod firing set code model development and validation – Initiation and detonation physics on the millimeter scale – Safe, arm, fuze, and fire technologies: processing of miniature fuze components, miniature electronic safe and arm detonator designs, and novel fuzing systems – Advanced initiation systems: diagnostics development, microdetonics, miniature initiation systems, and detonators for enhanced safety – MESASAR synthetic aperture radar (SAR) sensors – Vertical cavity surface emitting laser (VCSEL) sensors for proximity fuzing ***FY 2010 Accomplishments:*** – Completed finite element analysis of circuit boards under bending loads – Developed a fault tree for potential field programmable gate array (FPGA) operational failure modes – Developed an analytical basis for predicting how Inertial Measurement Unit (IMU) performance affects SAR quality – Developed an approach to use real-time imagery to correct antenna pointing error in SAR – Developed and validated an approach to an adaptive threshold for endo-clutter ground moving target indicator (GMTI), which lowers false alarm rate – Completed prototype laser emitter and microlens arrays for VCSEL proximity sensor – Successfully captured Schlieren images of DoD Spider and Vari-drive detonators – Successfully tested plane-wave generators – Demonstrated use of James initiation model to determine acceptor/donor charge transfer for LX-16 into ultrafine (UF)-TATB – Determined detonation velocity of UF-TATB as a function of charge diameter and confinement – Fabricated a laboratory version of a 32 volt thin-film thermal battery (TFTB) with 2X improvement in energy density over state-of-the-art designs ***FY 2011 Plans:*** – Develop a nanoscale lead zirconate titanate (PLZT) synthesis route that is available for commercialization (ceramic capacitor application) – Demonstrate >1,000 part batch of energetic materials deposited on micro-electrical mechanical systems (MEMS)-compatible devices – Complete computational analysis of single electronic component packaging on a board in a dynamic environment – Characterize magnetic performance of test toroids for flyback transformers			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Equation of state (EOS) refinement and implement model for ignition and growth of thin-pulse shock phenomena in CTH (for chip-slapper development) – Complete electric gun testing of TATB chip slapper – Complete initial retention testing and failure mode characterization for FPGA – Complete fabrication and testing of new monopulse antenna for SAR – Redesign laser, photodetector, microlens array, and device integration based on generation 2 device testing – Provide prototype VCSEL-based proximity sensor to DoD for evaluation – Complete pellet height study of detonator for enhanced safety – Complete microdetonics detonation gap transfer study – Demonstrate explosive drive particle imaging velocimetry (PIV) – Improve functionality in FireMod suite of codes for firing systems – Conduct validation experiments for traditional and 1.6 Hazard class chip slapper detonator designs that were optimized using FireMod – Test capability of electric gun to produce a planewave generator for micro-wedge studies of initiation and detonation on the mm-scale – Fabricate first production 32 volt TFTB with 2X improvement in energy density over state-of-the-art designs ***FY 2012 Plans:*** – Demonstrate detonation transfer in thin-film energetic systems – Build PLZT-based capacitor – Produce narrow particle size distribution TATB for chip slapper initiator – Complete airborne demonstration of a fully integrated multimode SAR algorithm with integrated tracking – Redesign VCSEL proximity sensor components (laser, photodetector, microlens) for manufacturability and complete mass replication process development – Demonstrate explosive drive dynamic optical tomography of surfaces – Complete limited multiframe imaging and analysis of explosive drive using dynamic optical topography of surfaces (DOTS) technique			
Title: Warhead and Penetration Technology ***Description:*** This focus area supports the development of new warheads and penetrator weapons through advances in materials processing and characterization, instrumentation, and computational codes. In recent years there have been very large increases in warhead performance directly attributed to our ability to understand and accurately model the physics and fine details of new warhead designs, and to advances in increasingly sophisticated material processing. The Department's requirement to achieve	3.434	1.565	1.420

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
more precise weapon effects with minimum collateral damage is supported by work on controlled fragmentation, non-fragmenting warhead cases, and multiphase blast explosives (MBX). More recently, increases in performance and reductions in vulnerability (IM) are being achieved through improved warhead integration into munitions using a systems-oriented approach. The goals for penetrator weapons are to investigate, develop, and transition advanced technologies for the design, development, and performance assessment of the next generation of high performance, precision strike weapons. This effort directly supports national initiatives to defeat hard and deeply buried targets, which are proliferating worldwide, and to deny/defeat weapons of mass destruction. The work addresses high-velocity penetration into granular materials (sand and soil), penetration into advanced concrete, new penetrator materials and designs, and non-inertial onboard instrumentation. The specific projects in the warhead and penetration technology focus area are: – Multiphase blast munitions (MBX) technology – Erosive initiation technology – Dynamic behavior of sand – Integrated munitions modeling & experimentation – Modeling of strategic structures – Concrete perforation and penetration modeling & experiments – High-g MEMS sensor development – Structural dynamics and vibration effects – Dynamic characterization of accelerometers – High-speed pressure-shear experiments on granular materials – Explosive/metal interactions – Structure, mechanical & shock-loading response, & modeling of materials – Controlled effects warhead materials ***FY 2010 Accomplishments:*** – Improved MBX model in ALE3D – Measured force history of erosive initiators to support hydrocode improvements – Developed EM screening tests for compatibility with erosive intiators – Completed simulations of ARDEC warhead fragmentation tests using peridynamics code KRAKEN – Implemented user-friendly upgrades to KRAKEN code – Completed fabrication of new test apparatus for study of dynamic transfer of stresses across interfaces			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Completed instrumented terminal ballistics and perforation experiments with high-strength concrete – Reported effects of boundary, shape, and deformability on behavior of granular materials under dynamic loading – Completed filled hemi, explosively driven fragmentation of copper, steel, and zirconium – Completed characterization and constitutive modeling of steel for rocket motor casings – Completed initial modeling of effect of shockwave profile on copper spallation ***FY 2011 Plans:*** – Integrate programmed burn meta-model for MBX into ALE3D – Investigate new optical diagnostic techniques for MBX – Complete study of erosive initiator for selectable yield – Complete verification and validation of KRAKEN and release initial version to DoD users – Implement the material point method into CTH for analysis of weapons effects on structures – Complete dynamic testing of a new MEMS-based pressure sensor for penetration tests – Complete testing and analysis of dynamic stress transfer across simple interfaces without chatter – Complete testing and analysis of new commercial high-g accelerometers – Complete dynamic high-pressure/shear experiments on granular materials – Complete study of effects of fracture and fluid interaction on dynamic behavior of granular materials – Conduct explosive-filled hemisphere tests on copper – Apply material particle methods to model detonation of explosive-filled hemisphere – Complete analysis of explosive-filled 4340 steel hemisphere experiments – Complete initial HE sweeping detonation-wave incipient spall testing in steel, copper, and tantalum – Update weapon material database of constitutive properties – Complete characterization/constitutive modeling of 4340 steel as function of heat treatment – Complete initial dynamic tensile extrusion experiments on Zr, DU, Ta, and U-6Nb as function of elevated temperature – Complete initial HE sweeping detonation-wave incipient spall testing in 1018 steel, Cu, and Ta – Complete initial metallographic/OIM analysis of sweeping detonation-wave spallation damage evolution in Cu and Ta – Compare oblique shock modeling simulations to post-mortem analysis of oblique preshocked Cu and Ta to ascertain instability signatures and correlated with fracture/fragmentation – Complete analysis of the influence of stress state on shear localization in high-purity Fe – Develop processing method to produced controlled effects samples for high-explosive loading – Complete scoping simulation studies of fragmentation response using existing particle methods – Produce first batch of powder of controlled effects warhead materials ***FY 2012 Plans:***			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Validate liner simulations for MBX – Complete initial discovery experiments of dense particle phase flow in MBX using improved diagnostics – Develop models for dilute flow regime in MBX – Add deviatoric stress capability to material point method capability within CTH – Develop models for transfer of stress waves across interfaces without chatter – Complete limited high-speed pressure-shear experiments on granular materials – Develop first generation sand constitutive models for ALE3D – Complete characterization of 155 HF-1 steel in support of insensitive munitions modeling and simulation – Conduct sweeping detonation-wave incipient spall testing on DU – Complete analysis of Cu fragmentation and study of the effects of inclusions on fragmentation – Complete study of fragmentation of Ag-Cu allow when subjected to prestraining – Complete quasi-static and laser induced shock experiments on first batch of controlled effects warhead materials			
Title: Munitions Lifecycle Technologies	1.502	3.577	3.246
Description: This focus area supports improving the Department's ability to understand, measure, predict, and mitigate safety and reliability problems caused by materials aging and degradation in weapons systems. This area also focuses on developing technologies for the safe and environmentally friendly demilitarization, recycling, and reuse of munitions. Current stockpile assessment methods typically focus on addressing materials aging and reliability problems after they occur, rather than anticipating and avoiding future problems or failure mechanisms. The overall objective of this work is to develop a toolset of computational models that are able to quantitatively predict materials aging processes and ultimately improve the long-term reliability of weapons systems, sub-assemblies, and/or components. This objective is achieved by: identifying aging mechanisms, quantifying the rates at which those aging mechanisms occur, developing predictive models, and using these models to predict the munitions stockpile reliability. An additional objective of this work is to develop technologies and methodologies to enable munitions health management and condition-based maintenance. The specific projects in the warhead and penetration technology focus area are: – Predictive materials aging including: solder interconnect reliability, corrosion of electronics, and adhesive degradation – MEMS reliability – Military use of commercial-off-the-shelf (COTS) electronics – Complex system health assessment ***FY 2010 Accomplishments:***			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Used a connector corrosion model in an electrical system performance analysis to predict the effect of corrosion on system reliability – Completed a dynamic recrystallization model for whisker growth in solder materials – Determined effects of surface roughness and water on degradation of adhesive strength of polymers on metals – Designed and fabricated a series of MEMS reliability test structures ***FY 2011 Plans:*** – Develop a de-bonding metric for displacement of an adhesive by water – Complete tin whisker validation experiments for dynamic recrystallization (DRX) model – Complete tin whisker validation experiments for DRX model – Complete second phase, electronic package-on-package test vehicle assembly – Demonstrate engineering aging structures integrated into a military system – Validate long-term life predictive models after 7 years of field storage of COTS electronics – Publish practices on Counterfeit Avoidance and Detection of COTS electronics – Develop life prediction models for new COTS materials and technologies – Implement a population reliability summary in SRFYDO reliability analysis software – Complete a case study on environmental science condition-based reliability modeling for a single failure mode from a DoD weapon system – Develop additional reliability assessment tools for evaluating management strategies for future consumption and maintenance of weapons systems – Develop methodology for characterizing future usage patterns based on historical usage information ***FY 2012 Plans:*** – Complete initial tin solder contamination mitigation trials – Develop model to predict debonding in a primer/adhesive system in a humid environment – Generalize weapon system health assessment model to connect environmental to degradation summaries – Develop methodology for selection of lifecycle variables at component level in weapon system health assessment model			
Accomplishments/Planned Programs Subtotals	21.462	22.700	20.372

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603225D8Z: *Joint DOD/DOE Munitions Technology Development*

F. Performance Metrics

1) Transitions of technologies developed by the Program are tracked and documented. In FY10 there were more than 25 transitions to DoD.
2) Attendance and technical interactions at the biannual meetings of the nine Technology Coordinating Groups (TCGs) are tracked and documented
3) Laboratory Five Year Plans are prepared, evaluated, and analyzed by management and technical staff
4) TCG Chairmen's Annual Assessments for each TCG are critically reviewed by the Technical Advisory Committee to determine progress, validate transition plans, and verify relevance of each project
5) Project progress toward goals and milestones is assessed at each biannual TCG meeting and critically reviewed annually by the Technical Advisory Committee
6) Annual technical reports and papers are tracked and documented

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603250D8Z: *Systems 2020 Advanced Technology Develpment*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	-	4.381	-	4.381	12.688	12.724	14.727	14.747	Continuing	Continuing
P211: *Systems 2020 Advanced Technology Development*	-	-	4.381	-	4.381	12.688	12.724	14.727	14.747	Continuing	Continuing

A. Mission Description and Budget Item Justification

This is a new start in FY12. The Systems 2020 initiative will set the technical foundation the Department's system needs for the next decade. This initiative funds OSD and Service research, development and pilot efforts in key technologies and tools for design and development of complex systems. Systems 2020 will enable the Department of Defense to design and build a new class of adaptable systems that allow the warfighter to operate with far greater speed and agility to address changing threats, environments and missions.

Systems 2020 will provide tools, technologies and methods to accelerate delivery of complex adaptable systems to meet the warfighters' changing needs. Systems 2020 advanced technology development will demonstrate the concepts and technologies involved in efficient design and development of complex adaptive systems, assessing their feasibility and suitability for integration into overall system development methods.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	4.381	-	4.381
Total Adjustments	-	-	4.381	-	4.381
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Start Adjustments	-	-	4.500	-	4.500
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.113	-	-0.113
• Economic Assumptions	-	-	-0.006	-	-0.006

Change Summary Explanation

This is a new start in FY12. The Systems 2020 initiative will set the technical foundation the Department's system needs for the next decade. This initiative funds OSD and Service research, development and pilot efforts in key technologies and tools for design and development of complex systems.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603250D8Z: *Systems 2020 Advanced Technology Develpment*

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submisstion.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603250D8Z: *Systems 2020 Advanced Technology Develpment*	PROJECT P211: *Systems 2020 Advanced Technology Development*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P211: *Systems 2020 Advanced Technology Development*	-	-	4.381	-	4.381	12.688	12.724	14.727	14.747	Continuing	Continuing

A. Mission Description and Budget Item Justification

This is a new start in FY12. The Systems 2020 initiative will set the technical foundation the Department's system needs for the next decade. This initiative funds OSD and Service research, development and pilot efforts in key technologies and tools for design and development of complex systems. Systems 2020 will enable the Department of Defense to design and build an entirely new class of adaptable systems that allow the warfighter to operate with far greater speed and agility to address changing threats, environments and missions.

Systems 2020 will provide tools, technologies and methods to accelerate delivery of complex adaptable systems to meet the warfighters' changing needs. Systems 2020 advanced technology development will demonstrate the concepts and technologies involved in efficient design and development of complex adaptive systems, assessing their feasibility and suitability for integration into overall system development methods.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Systems 2020 Advanced Technology Development	-	-	4.381
FY 2010 Accomplishments: N/A			
FY 2011 Plans: N/A			
FY 2012 Plans: -Perform advanced technology development of Systems 2020 tools, technologies and methods to accelerate the delivery of complex adaptable systems. -Perform advanced technology development of systems analysis and design engineering tools to address a wide range of architectures and design drivers in the context of uncertain missions and threats. -Perform advanced technology development of Systems 2020 concept engineering and integrated modeling environments to enable rapid assessment of new material approaches and increase the productivity of engineering, design and production processes.			
Accomplishments/Planned Programs Subtotals	-	-	4.381

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603250D8Z: *Systems 2020 Advanced Technology Develpment*	PROJECT P211: *Systems 2020 Advanced Technology Development*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

TBD

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603618D8Z: *Joint Electronic Advanced Technology*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	25.576	8.386	7.287	-	7.287	7.179	7.846	8.535	8.821	Continuing	Continuing
P619: *Joint Electronic Advanced Technology*	25.576	8.386	7.287	-	7.287	7.179	7.846	8.535	8.821	Continuing	Continuing

A. Mission Description and Budget Item Justification

In Overseas Contingency Operations (OCO), the United States must be ready to meet the widespread and growing threat of asymmetric weapons such as Man Portable Air Defense Systems (ManPADS), unguided hostile fire and portable small weapons improvised from commercially available electronic sensors, computer modules, navigation and control components coupled with various disruptive payloads. Such devices provide terrorists and foreign military units the novel means to rapidly construct a wide range of weapons capable of disruptive actions against civilian and military forces alike. The U.S. must be ready to counter such weapons on short notice.

The asymmetric nature of such devices is already well understood by terrorists. ManPADS and mortars have been used to attack both air and ground forces, and pose a threat in any region due to their portability. Digital processors, analog-to-digital converters and digital optical sensors give terrorists the means to deploy unexpected threats on short notice. Conventional kinetic defenses against these devices can be impractical in urban settings. Because the speed of appearance of these disruptive devices can be short, such threats are asymmetric in comparison with the long development cycles that are typical of U.S. military defensive systems. Together these asymmetries highlight the need to rapidly evolve alternative Electronic Warfare, Information Operations and Counter Terrorism capabilities suitable for neutralizing such threats in a timescale that is commensurate with their appearance. This program element investigates novel means to detect and neutralize asymmetric threats, as well as special mission and other methods to employ asymmetric principles against our adversaries.

This program element seeks to identify rapidly deployable solutions (outside of service programs of record) that can effectively mitigate asymmetric threats by integrating advanced commercial or military off-the-shelf technology in innovative ways that augment and/or reduce risk when inserted into service programs of record.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603618D8Z: *Joint Electronic Advanced Technology*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	10.838	8.386	8.479	-	8.479
Current President's Budget	25.576	8.386	7.287	-	7.287
Total Adjustments	14.738	-	-1.192	-	-1.192
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	14.970	-			
• SBIR/STTR Transfer	-0.129	-			
• Other Program Adjustments	-0.103	-	-	-	-
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.713	-	-0.713
• Defense Efficiency - Contractor Staff Support	-	-	-0.468	-	-0.468
• Economic Assumptions	-	-	-0.011	-	-0.011

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603618D8Z: *Joint Electronic Advanced Technology*	PROJECT P619: *Joint Electronic Advanced Technology*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P619: *Joint Electronic Advanced Technology*	25.576	8.386	7.287	-	7.287	7.179	7.846	8.535	8.821	Continuing	Continuing

A. Mission Description and Budget Item Justification

The widespread and growing availability of sophisticated, commercially available electronic sensors, computer modules, navigation and control components coupled with widely proliferated Man Portable Air Defense Systems (ManPADS), portable explosives, mortars, rockets provide terrorists and foreign military units with the novel means to rapidly construct a wide range of weapons capable of disruptive actions against military forces. In Overseas Contingency Operations (OCO), the United States must be ready to counter such weapons on short notice. The asymmetric nature of such devices is already well understood by terrorists. ManPADS, man portable weapons and mortars have been used to attack both air and ground forces, and pose a threat to any region due to their portability. Digital processors, analog-to-digital converters and digital optical sensors give terrorists the means to deploy unexpected threats on short notice. Because conventional kinetic defenses against these devices can be impractical in urban settings and because the speed of appearance of such devices can be short, such threats are disruptive and asymmetric in comparison with the typically long development cycles associated with U.S. military defensive systems. These asymmetries highlight the need to rapidly evolve alternative Electronic Warfare, Information Operations and Counter Terrorism capabilities suitable for neutralizing such threats. This program element will investigate novel means to detect and neutralize these asymmetric threats, as well as special mission and other methods to employ asymmetric principles against our adversaries.

This program element seeks to identify rapidly deployable solutions (outside of service programs of record) that can effectively mitigate asymmetric threats by integrating advanced commercial or military off-the-shelf technology in innovative ways that augment and/or reduce risk when inserted into service programs of record. Laboratory and field testing will be used to evaluate the feasibility and military utility of resultant low cost, near term capabilities. FY 2012 efforts will investigate, integrate, test and demonstrate elements of the following technologies:

1. Integrated Situational Awareness and Countermeasures

DoD helicopters currently use a federated architecture of sensors and countermeasures to protect themselves against guided and unguided hostile threats while simultaneously avoiding collisions with the ground and other obstacles. These sensors typically provide the pilot with a separate display of radar, radar warning, missile warning or off-board communications to guide the pilot in selecting automatic or manual countermeasures against radar, laser, or radio frequency guided threats. These un-fused sensors create a serial information stream which can induce an inadequate response to the threat. These federated systems consume weight, space, and power which are at a premium in small platforms. The initial goal of this project is to fuse multiple functions such as missile detection and countermeasures, hostile fire detection, navigation in visually degraded environments, and active search using optical detection into a one or two aperture device with a single integrated display to produce improved situational awareness. Subsequent efforts of this joint service government/contractor team will assess integration of multi-platform sensor fusion using Radio Frequency (RF) and laser data-links to create cross-platform shared situation awareness among a section or division of helicopters or Unmanned Aerial Vehicles (UAVs) which is more complete than a single platform warning/tracking system. Such efforts will be proven in a series of Rotary Wing Aircraft Survivability Experiments (RASE), bringing sensors and shooters together in a collaborative learning environment using live fire with a variety of weapons and environments.

2. Low Cost/Near Term Counter Asymmetric Systems

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603618D8Z: *Joint Electronic Advanced Technology*	PROJECT P619: *Joint Electronic Advanced Technology*

Investigate low cost, near term technologies solutions to allow aircraft to fly in medium to high ManPADS threat airspace in support of OCO. Emphasis is on threats, aircraft and system approaches that are not covered by existing programs of record including but not limited to: innovative threat warning, advanced pyrophoric decoys, miniature high reliability lasers, magnetically steered high reliability pointer-trackers, higher powered and higher duty cycle lasers, preemptive countermeasures systems.

Three specific tasks leading to a rapid technology transition will be completed by FY 2011:

Distributed Ground-based Threat Detection System (DGTDS) is a passive electro-optic technology that can detect an airborne ManPADS threat and declare it to aircraft in the vicinity so that active or passive countermeasures can be employed to defeat the incoming missile. DGTDS provides the technology for a ground based regional aircraft missile warning system that can protect a large airspace using passive optical sensors. This warning system has an extremely high probability of detection and a very low false alarm rate. This technology will augment current missile warning systems in urban environments. The technology also can protect Civil Reserve Aircraft Fleet (CRAF) when they are retrofitted with Infrared Countermeasures (IRCM). CENTCOM, SOCOM, and TRANSCOM have all expressed interest.

Aircraft ManPADS Protection System (AMPS) was created to provide ground based missile launch detection notification to participating aircraft via ground to air data link and release of pyrotechnic or pyrophoric countermeasure to defeat missiles. Development of AMPS was a contracted effort. It will supplement current installed Ultra Violet (UV) missile launch detection systems to improve aircraft survivability against both long range and minimum range ManPADS engagements. SOCOM and TRANSCOM have all expressed interest.

Special Materials Aero Urban Decoy (SMAUD) is an advanced multi-part IRCM decoy which is non-pyrotechnic, safe, covert, and effective. The contractor is the advanced special materials developer and decoy designer. Decoy will provide effective IRCM using small (1x1 inch) decoys with minimal expenditure of payload (two decoys). SOCOM and Army have funded part of the work and expressed interest.

3. Disruptive Technology Defeat and Utilization
Emerging and disruptive technologies analysis; rapid prototyping of technologies required to adapt counter-terrorism techniques to threats in OCO. Primary payoff is an assessment of current system capabilities and limitations against the threat and capture of baseline system performance against the threat set for developing technologies. Joint Electronic Advanced Technology (JEAT) will demonstrate rapid prototyping of technologies required to combat adaptive threats in the OCO. Emphasis will be on demonstrating an end-to-end kill chain and techniques which minimize or eliminate collateral damage. Starting in FY 2011 and FY 2012, the efforts of this mostly-government team will include novel techniques to detect and locate the signatures of terrorist activities using electronic means. Trident Spectre provides a venue for various members of Special Forces, Conventional Forces and Intelligence Community to collaborate on and evaluate technologies and techniques related to “Tactical Intelligence” in a technical, operational, and safe environment. Trident Spectre provides an opportunity for capability developers (scientists, engineers, designers) to interact directly with tactical operators, collectors and analysts; and a process that correctly and efficiently reviews potential tactical Intelligence technologies and techniques that will enhance the operational capability of the DoD activities in OCO. Primary payoff is improved connectivity and more efficient collection and dissemination of Tactical Intelligence. Customers include CENTCOM, SOCOM, DDR&E, DoD Conventional/Special Forces, and members of the Intelligence Community. Products include an after action report and a transition plan moving management activities to SOCOM.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603618D8Z: *Joint Electronic Advanced Technology*	PROJECT P619: *Joint Electronic Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Integrated Situation Awareness and Countermeasures	5.685	1.623	2.640

Description: DoD helicopters currently use a federated architecture of sensors and countermeasures to protect themselves against guided and unguided hostile threats while simultaneously avoiding collisions with the ground and other obstacles. These sensors typically provide the pilot with a separate display of radar, radar warning, missile warning or off-board communications to guide the pilot in selecting automatic or manual countermeasures against radar, laser, or radio frequency guided threats. These un-fused sensors create a serial information stream which can induce an inadequate response to the threat. These federated systems consume weight, space, and power which are at a premium in small platforms. The initial goal of this project is to fuse multiple functions such as missile detection and countermeasures, hostile fire detection, navigation in visually degraded environments, and active search using optical detection into a one or two aperture device with a single integrated display to produce improved situational awareness. Subsequent efforts of this joint service government/contractor team will assess integration of multi-platform sensor fusion using RF and laser data-links to create cross-platform shared situation awareness among a section or division of helicopters or UAV's which is more complete than a single platform warning/tracking systems. Such efforts will be proven in a series of RASE, bringing sensors and shooters together in a collaborative learning environment using live fire with a variety of weapons and environments.

FY 2010 Accomplishments:
This project integrated missile warning, hostile fire warning, radar, radar warning, or off-board communications in a single integrated architecture adaptable to single or multiple platforms. By combining high-speed, high-resolution tracking mechanisms with either on-board decoys or on-/off-board directed-energy devices, it demonstrated the end-to-end capability to detect, track, and defeat shoulder-fired ManPADS and unguided weapons known to be in the hands of terrorists in OCO. FY 2010 accomplishments included creation of a prototype IRCM beam director that contains only one moving part which is a magnetically actuated mirror, and will significantly improve reliability of IRCM systems while supporting an expandable architecture. Feasibility of integrated hostile fire detection and geolocation was proven through experimentation. Deliverables included a report on feasibility of Hostile Fire Indication (HFI) detection, geolocation and countermeasures. Planned and executed the first RASE. High quality dynamic, live fire data was obtained by participants and a final report specifying results was provided to DDR&E.

FY 2011 Plans:
FY 2011 efforts include integration of a high speed optical detector (position sensing detector array) with the high speed magnetic mirror in a single unit to demonstrate a breadboard capability for hostile fire detection, geo-location and non-lethal countermeasures. Efforts to integrate features to navigate in degraded visual environments will be started. Follow-on testing will continue under RASE. Deliverables include a report on feasibility of combined IRCM/HFI/Degraded Visual Environment functionality.

FY 2012 Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603618D8Z: *Joint Electronic Advanced Technology*	PROJECT P619: *Joint Electronic Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Complete efforts to demonstrate the feasibility of a hostile fire detection and non-lethal countermeasures capability using unique high speed detectors and magnetically actuated optics. Demonstrate capability to use magnetically actuated mirror technology to provide situational awareness in degraded visual environments. Begin efforts to integrate free space laser communications capability based upon magnetically actuated optics and study/begin to demonstrate feasibility of combining design elements with IRCM, Hostile Fire Detection/Countermeasures and obstacle avoidance systems into an integrated package.			
Title: Low Cost/Near Term Counter Asymmetric Systems	16.513	2.177	1.144
Description: Investigate low cost, near term technologies solutions to allow aircraft to fly in medium to high ManPADS threat airspace in support of OCO. Emphasis is on threats, aircraft and system approaches that are not covered by existing programs of record including but not limited to: innovative threat warning, advanced pyrophoric decoys, miniature high reliability lasers, magnetically steered high reliability pointer-trackers, higher powered and higher duty cycle lasers, preemptive countermeasures systems. Three specific tasks leading to a rapid technology transition will be completed by FY 2011: DGTDS is a passive electro-optic technology that can detect an airborne ManPADS threat and declare it to aircraft in the vicinity so that active or passive countermeasures can be employed to defeat the incoming missile. DGTDS provides the technology for a ground based regional aircraft missile warning system that can protect a large airspace using passive optical sensors. This warning system has an extremely high probability of detection and a very low false alarm rate. The intellectual property, which is protected by multiple patents, was developed by the government. This technology will augment current missile warning systems in urban environments. The technology also can protect CRAF when they are retrofitted with IRCM. CENTCOM, SOCOM, and TRANSCOM have all expressed interest. AMPS was created to provide ground based missile launch detection notification to participating aircraft via ground to air data link and release of pyrotechnic or pyrophoric countermeasure to defeat missiles. Development of AMPS was a contracted effort. It will supplement current installed UV missile launch detection systems to improve aircraft survivability against both long range and minimum range ManPADS engagements. SOCOM and TRANSCOM have all expressed interest. SMAUD is an advanced multi-part IRCM decoy which is non-pyrotechnic, safe, covert, and effective. The contractor is the advanced special materials developer and decoy designer. Decoy will provide effective IRCM using small (1x1 inch) decoys with minimal expenditure of payload (two decoys). SOCOM and Army have funded part of the work and expressed interest. ***FY 2010 Accomplishments:***			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603618D8Z: *Joint Electronic Advanced Technology*	PROJECT P619: *Joint Electronic Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
DGTDS, AMPS and SMAUD are designed to work together. Work in FY 2010 was directed toward allowing the basic technology to be implemented with tactically deployable COTS technology. The following hardware and software deliverables enabled the system to be configured into a tactically deployable package that will support the ongoing OCO. DGTDS algorithms were developed and tested for enhanced filtering at optical nodes to reduce data-link throughput requirements, to increase the probability of detection, to decrease the false alarm rate. The operating system was upgraded to LINUX based OS to create a deployable system architecture. The calibration system was completed to increase accuracy of missile track rate and shooter location determination. All obsolete COTS PC hardware replaced with Field Programmable Gate Array system to allow for implementation of anti-tamper protocols and implementation of core video processing algorithms in VHDL software. In conjunction with AMPS, DGTDS completed end to end, live-fire, system evaluation of all new hardware and software elements. AMPS completed testing of ground based prototype system, exceeding contract performance requirements; completed re-hosting of ground based control software to compatible operating system for integration into the DGTDS processor; completed final design of airborne hardware, completed manufacture of initial copies of airborne hardware; base-lined airborne hardware design for inclusion in final delivery of project documentation; delivered airborne hardware to environmental qualification and contractor test activities; and completed and published ground based closeout briefing and documentation. SMAUD continued development of a special materials decoy to provide protection for H-60 suppressed signature aircraft, and tested the ASC-1224 and ASC-1292 decoys in Dec 2009. In this government/contractor joint effort, test coordination, data handling and reporting was managed by JEAT. The resulting test data was distributed to Navy and Air Force modeling and simulation labs for analysis and further modeling, which resulted in the development of a modified decoy design. A report of the effectiveness results was provided to Army, Navy and Air Force IRCM program managers. The modified decoy, the ASC-1292D, was tested in May 2010. The test data was distributed to Navy and Air Force modeling and simulation labs for analysis, and a final decoy design was developed. A report of very promising effectiveness results was provided to Army, Navy and Air Force IRCM program managers. Mini Scanning Mirror (MSM) technology advancement was accomplished under this project in FY 2010. The team completed design and laboratory evaluation of IRCM scan mirror design to achieve TRL-5, completed a live fire and field evaluation of MSM at Tonopah and White Sands; conducted a feasibility demonstration of the MSM and Position Sensing Detector Array (PSD-A) to show feasibility and possible utility for hostile fire detection; and continued efforts to enable technology for integration into CIRCM increment 2. This project transitions to JEAT Integrated Situation Awareness and Countermeasures in FY 2011.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603618D8Z: *Joint Electronic Advanced Technology*	PROJECT P619: *Joint Electronic Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Defensive Systems Data Recorder (DSDR) was developed for Special Operations aircraft that will simultaneously record multiple Aircraft Survivability Equipment (ASE) systems' message traffic on their respective data line, have no effect on ASE performance, and be transparent to aircrew operations. Developed software tools for timely evaluation of DSDR downloads. Evaluated DSDR contributions to mission planning, intelligence analysis, and real-time situational awareness. ***FY 2011 Plans:*** DGTDS will focus on finalizing all system documents and hardware drawing to allow for a smooth transition of the technology to the customer. When completed, this technology will allow any large urban airfield to provide an exceptionally high quality of missile warning to any aircraft in the area. It can be coupled with either an air or ground based countermeasure system. System documentation will be completed to enable seamless technology transfer to limited production/industry. AMPS will complete aircraft hardware prototype creation, qualify hardware for prototype installation in aircraft, integrate into AH-1Z System Integration Lab at Naval Air Warfare Center, Weapons Division, China Lake, CA for system performance testing in Dec 2010, perform end-to-end live fire missile firing test at China Lake to demonstrate system performance in Dec 2010, close out project with final delivery of all system design documentation, hardware, and software code in Feb 2011. System design/ hardware will be available for near term integration/implementation for contingency operations. SMAUD will conduct effectiveness flight testing for the final decoy design for H-60 aircraft. Funding will be provided to DoD components for test planning, test aircraft and vans, and range costs in third quarter 2011. Conduct modeling and simulation of the potential effectiveness of this decoy concept for the CV-22. Funding will be provided to DoD Modeling and Simulation laboratories for analysis and transition. Estimate completion in second quarter 2011. Begin efforts to investigate novel means of detecting and locating signatures of terrorist activity, differentiating between terrorist and indigenous activities and providing timely, actionable intelligence enabling disruption of terrorist kill chains. ***FY 2012 Plans:*** Continue efforts to investigate novel means of detecting and locating signatures of terrorist activity, differentiating between terrorist and indigenous activities and providing timely, actionable intelligence enabling disruption of terrorist kill chains. Based upon the OSD Advanced Threat study, completed in FY 2010, JEAT will continue efforts to implement and demonstrations solutions to emerging threats. JEAT will begin efforts to evaluate techniques to rapidly develop countermeasures to advanced, fourth and fifth generation IR missiles. This will include signature measurements, modeling, technique development and			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603618D8Z: *Joint Electronic Advanced Technology*	PROJECT P619: *Joint Electronic Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
evaluation as well as laboratory trials. Create and populate data into the countermeasures database available for broad joint service use.			
Title: Disruptive Technology Defeat and Utilization	3.378	4.586	3.503

Description: Emerging and disruptive technologies analysis; rapid prototyping of technologies required to adapt counter-terrorism techniques to threats in OCO. Primary payoff is an assessment of current system capabilities and limitations against the threat and capture of baseline system performance against the threat set for developing technologies. JEAT will demonstrate rapid prototyping of technologies required to combat adaptive threats in the OCO. Emphasis will be on demonstrating an end-to-end kill chain and techniques which minimize or eliminate collateral damage. In FY 2011 and FY 2012, the efforts of this mostly-government team will include novel techniques to detect and locate the signatures of terrorist activities using electronic means. Trident Spectre provides a venue for various members of Special Forces, Conventional Forces and Intelligence Community to collaborate on and evaluate technologies and techniques related to “Tactical Intelligence” in a technical, operational, and safe environment. Trident Spectre provides an opportunity for capability developers (scientists, engineers, designers) to interact directly with tactical operators, collectors and analysts; and a process that correctly and efficiently reviews potential tactical Intelligence technologies and techniques that will enhance the operational capability of the DoD activities in OCO. Primary payoff is improved connectivity and more efficient collection and dissemination of Tactical Intelligence. Customers include CENTCOM, SOCOM, DDR&E, DoD Conventional/Special Forces, and members of the Intelligence Community. Products include an after action report and a transition plan moving management activities from DDR&E.

FY 2010 Accomplishments:
This project provided expertise to Joint Integrated Air and Missile Defense Organization (JIAMDO), jointly with United States Northern Command (USNORTHCOM), for a variety of U.S. defense systems demonstrated and evaluated in the May 2010 timeframe and to demonstrate an end-to-end kill chain of UAVs via the Black Dart Capability Evaluation. Black Dart completed and published Black Dart VI Final Report; transitioned Black Dart sponsorship from OSD, AT&L to JIAMDO; Provided bridge expertise to JIAMDO for the planning and execution of Black Dart 2010; successfully executed Black Dart 2010, May 2010; Provided JIAMDO with detailed statistical data on UAV sorties and mission profiles flown; Provided JIAMDO detailed Lessons Learned documentation for future planning requirements; and Initiated Black Dart 2011 Maritime venue planning and coordination. JEAT was a full partner in Trident Spectre management activities and developed a transition plan for Trident Spectre FY2011 activities and responsibilities.

FY 2011 Plans:
FY 2011 efforts will be developed in coordination with the defense research community and Defense Intelligence Agency (DIA) elements seeking ways to avoid technological surprise. Further efforts will investigate novel means of detecting and locating signatures of terrorist activity, differentiating between terrorist and indigenous activities and providing timely, actionable

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603618D8Z: *Joint Electronic Advanced Technology*	PROJECT P619: *Joint Electronic Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
intelligence that allows asymmetric disruption of terrorist kill chains. JEAT will be working with the U.S. SOCOM, NSOC, and other members of the Special Forces, Conventional Forces, and Intelligence Community in planning, executing, and reporting on Trident Spectre. This activity will provide a venue for various members of the DoD and Intelligence Community to collaborate on and evaluate technologies and techniques in a technical, operational, and safe environment, as well a technical out-brief to DDR&E leadership and report on the experiment's results. The payoff of this activity will be a process that correctly and efficiently reviews potential technologies and techniques that will enhance the operational capability of the war-fighter in OCO. This project will provide expertise to JIAMDO, jointly with USNORTHCOM, for a variety of U.S. defense systems to be demonstrated and evaluated in the Aug 2011 timeframe and to demonstrate an end-to-end kill chain of UAVs in the maritime environment. ***FY 2012 Plans:*** Continue efforts to investigate novel means of detecting and locating signatures of terrorist activity, differentiating between terrorist and indigenous activities and providing timely, actionable intelligence enabling disruption of terrorist kill chains. JEAT will be working with the U.S. SOCOM, NSOC, and other members of the Special Operations and Intelligence Community in planning, executing, and reporting on Trident Spectre. This activity will provide a venue for various members of the DoD and Intelligence Community to collaborate on and evaluate technologies and techniques in a technical, operational, and safe environment, as well a technical out-brief to DDR&E leadership and report on the experiment's results. The payoff of this activity will be a process that correctly and efficiently reviews potential technologies and techniques that will enhance the operational capability of the warfighter in OCO.			
Accomplishments/Planned Programs Subtotals	25.576	8.386	7.287

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	159.264	206.917	187.707	-	187.707	199.262	197.326	207.588	211.347	Continuing	Continuing
P648: *Joint Capability Technology Demonstration (JCTD)*	159.264	206.917	187.707	-	187.707	199.262	197.326	207.588	211.347	Continuing	Continuing

Note

Through FY 2010, the appropriation, Program Element (PE) and Budget Activity (BA) structure for the Joint Capability Technology Demonstration (JCTD) model included the following:
JCTD PE 0603648D8Z (RDT&E-DW, BA-3)
JCTD Transition Funding PE 0604648D8Z (RDT&E-DW, BA-4)
Defense Acquisition Executive (DAE) (RDT&E-DW, BA-5)

In FY 2011 funding is transferred from the JCTD BA4 PE and Defense Aquisition Executive (DAE) Pilot programs into the JCTD BA3 PE. The JCTD BA-4 PE and DAE BA-5 Pilot program PEs end.

Today's operations require even faster delivery of new capabilities. Therefore, the JCTD Program was revised in FY 2010 to accelerate project selection, encourage capability demonstration of more short projects (one year or less) and fewer long projects (two to three years), and increase the delivery rate of new capabilities. This new process includes: improved synchronization with COCOM experimentation, streamlined project approval and initiation, clear 1-year deliverables and decision points for projects greater than a year in duration; and annual reviews of ongoing JCTDs to assess deliverables and continuation of the project.

A. Mission Description and Budget Item Justification

The Joint Capability Technology Demonstration (JCTD) Program directly addresses Joint, Coalition, and/or Interagency capability needs expressed by Combatant Commands (COCOMs). Due to significant successes since inception of the program (initially the Advanced Capability Technology Demonstration (ACTD) Program), the JCTD Program is now viewed by COCOMs as a primary means to rapidly develop, assess, and transition needed capabilities. Through partnering with other solution providers and resource sponsors, the JCTD Program typically leverages $2 in partner funding for every $1 in the JCTD budget. Thus, the value and impact to the COCOMs is significantly greater than a typical Research and Development program.

Key values demonstrated by the JCTD program are:
- The program has a long history of providing enduring capabilities. To date, 93% of completed JCTDs have successfully transitioned capabilities to warfighters. 70% of completed ACTD projects successfully transitioned their products. (See “Section D. Acquisition Strategy” for transition discussion).
- The program delivers capabilities rapidly. Projects execute within the Department o Defense Planning, Programming, Budgeting, and Execution (PPBE) process. In other words, when a new capability need is identified, a JCTD project can be started and completed before funding can start in the traditional PPBE cycle. The result is that 72 JCTD/ACTD projects delivered capabilities used in Operation Iraqi Freedom, and 52 projects delivered capabilities to Operation Enduring Freedom. Most of those capabilities would not have been delivered - or would have been significantly delayed – without the JCTD program.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*

- The program enables Coalition cooperative development by leveraging allied expertise and resources. Approximately 30% of JCTD projects involve some coalition participation. As a result of successful past collaborations, the program now enjoys routine interactions with the United Kingdom, Canada, Australia, the Republic of Korea, and the Republic of Singapore.
- The program enables development and execution of interdepartmental cooperation projects, such as projects with the Department of Homeland Security, Department of State, and Department of Transportation. Recent examples are interdepartmental collaborations for maritime awareness, air domain information sharing, and tunnel detection and characterization.
- The program enables rapid response to new Department of Defense priorities before Service PPBE cycles can respond. For example, the Department has recently established priorities for Building Partner Capacity, understanding human terrain, and nuclear forensics. The JCTD Program quickly responded and is providing initial capabilities that are transitioning to Service efforts.

MEASURABLE OUTCOMES: The JCTD model is capability-based, not threat-based and supports U.S. Combatant Command (COCOM) priorities by focusing on near-term joint needs. Stated metrics include: All JCTDs will deliver products within 12 months to enable assessment for project continuation; 50 percent of JCTDs will provide an operationally-relevant prototype within 12 months and 75 percent will complete final demonstration within 24 months of Implementation Directive signature. JCTDs will spiral products and deliverables during the demonstration. At least 75 percent of JCTD projects will transition products to a Program of Record (PoR), residual operations, or availability for procurement from the GSA Schedule.

Transition Achievement: The JCTD program has been achieving actual transition rates in excess of the stated goal. The JCTD Program defines transition as a project's product(s) going to new or existing PoRs and/or providing a residual product(s) sustained in direct support of operations that satisfies a specific requirement. Seventeen of the 18 JCTD projects that completed in FY 2010 have transitioned to PoR and/ or operational sustainment (93% successful transition). As of FY 2009, of 184 total AC/JCTDs, 64 have deployed in support of OEF/OIF covering the following Functional Areas: Battlespace Awareness, Command & Control, Force Application, Logistics, Protection, Net-Centric. Thirteen CENTCOM-sponsored AC/JCTDs deployed in OEF/OIF.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	168.577	206.917	211.229	-	211.229
Current President's Budget	159.264	206.917	187.707	-	187.707
Total Adjustments	-9.313	-	-23.522	-	-23.522
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-5.186	-			
• SBIR/STTR Transfer	-3.874	-			
• Defense Efficiency - Baseline Review	-	-	-14.523	-	-14.523
• Defense Efficiency – Contractor Staff Support	-	-	-0.935	-	-0.935
• Defense Efficiency – Report, Studies, Boards and Commissions	-	-	-7.492	-	-7.492
• Economic Assumptions	-	-	-0.572	-	-0.572
• Other internal adjustment	-0.253	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P648: *Joint Capability Technology Demonstration (JCTD)*		
Congressional Add: *Distributed Network Switching (DNS)*	1.600	-
Congressional Add Subtotals for Project: P648	1.600	-
Congressional Add Totals for all Projects	1.600	-

Change Summary Explanation

This budget submission combines the three JCTD Program Elements (transfers BA4 and Defense Acquisition Executive Pilot programs back to JCTD BA3 0603648D8Z).

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions. Achieved by eliminating the functions in support of PE 0604648D8Z and focusing efforts on critical technologies being developed in PE 0603648D8Z.

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Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, achieved a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P648: *Joint Capability Technology Demonstration (JCTD)*	159.264	206.917	187.707	-	187.707	199.262	197.326	207.588	211.347	Continuing	Continuing

Note

Through FY 2010, the appropriation, Program Element (PE) and Budget Activity (BA) structure for the Joint Capability Technology Demonstration (JCTD) model included the following:
JCTD PE 0603648D8Z (RDT&E/DW BA-3)
JCTD Transition Funding PE 0604648D8Z (RDT&E/DW BA-4)
Defense Acquisition Executive (DAE) (RDT&E/DW BA-5)

In FY 2011 funding is transferred from the JCTD BA4 PE and Defense Aquisition Executive (DAE) Pilot programs into the JCTD BA3 PE. The JCTD BA-4 PE and DAE BA-5 Pilot program PEs end.

Today's operations require even faster delivery of new capabilities. Therefore, the JCTD Program was revised in FY 2010 to accelerate project selection, encourage capability demonstration of more short projects (one year or less) and fewer long projects (two to three years), and increase the delivery rate of new capabilities. This new process includes: improved synchronization with COCOM experimentation, streamlined project approval and initiation, clear 1-year deliverables and decision points for projects greater than a year in duration; and annual reviews of ongoing JCTDs to assess deliverables and continuation of the project.

A. Mission Description and Budget Item Justification

The Joint Capability Technology Demonstration (JCTD) Program directly addresses Joint, Coalition, and/or Interagency capability needs expressed by Combatant Commands (COCOMs). Due to significant successes since inception of the program (initially the Advanced Capability Technology Demonstration (ACTD) Program), the JCTD Program is now viewed by COCOMs as a primary means to rapidly develop, assess, and transition needed capabilities. Through partnering with other solution providers and resource sponsors, the JCTD Program typically leverages $2 in partner funding for every $1 in the JCTD budget. Thus, the value and impact to the COCOMs is significantly greater than a typical Research and Development program.

Key values demonstrated by the JCTD program are:
- The program has a long history of providing enduring capabilities. To date, 93% of completed JCTDs have successfully transitioned capabilities to warfighters. 70% of completed ACTD projects successfully transitioned their products. (See “Section D. Acquisition Strategy” for transition discussion).
- The program delivers capabilities rapidly. Projects execute within the DoD Planning, Programming, Budgeting, and Execution (PPBE) Process. In other words, when a new capability need is identified, a JCTD project can be started and completed before funding can start in the traditional PPBE cycle. The result is that 72 JCTD/ ACTD projects delivered capabilities used in Operation Iraqi Freedom, and 52 projects delivered capabilities to Operation Enduring Freedom. Most of those capabilities would not have been delivered - or would have been significantly delayed – without the JCTD program.

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- The program enables Coalition cooperative development by leveraging allied expertise and resources. Approximately 30% of JCTD projects involve some coalition participation. As a result of successful past collaborations, the program now enjoys routine interactions with the United Kingdom, Canada, Australia, the Republic of Korea, and the Republic of Singapore.
- The program enables development and execution of interdepartmental cooperation projects, such as projects with the Department of Homeland Security, Department of State, and Department of Transportation. Recent examples are interdepartmental collaborations for maritime awareness, air domain information sharing, and tunnel detection and characterization.
- The program enables rapid response to new Department of Defense priorities before Service PPBE cycles can respond. For example, the Department has recently established priorities for Building Partner Capacity, understanding human terrain, and nuclear forensics. The JCTD Program quickly responded and is providing initial capabilities that are transitioning to Service efforts.

MEASURABLE OUTCOMES: The JCTD model is capability-based, not threat-based and supports U.S. Combatant Command (COCOM) priorities by focusing on near-term joint needs. Stated metrics include: All JCTDs will deliver products within 12 months to enable assessment for project continuation; 50 percent of JCTDs will provide an operationally-relevant prototype within 12 months and 75 percent will complete final demonstration within 24 months of Implementation Directive signature. JCTDs will spiral products and deliverables during the demonstration. At least 75 percent of JCTD projects will transition products to a Program of Record (PoR), residual operations, or availability for procurement from the GSA Schedule.

Transition Achievement: The JCTD program has been achieving actual transition rates in excess of the stated goal. The JCTD Program defines transition as a project's product or products going to new or existing PoRs and/or providing residual products sustained in direct support of operations that satisfies a specific requirement. Seventeen of 18 JCTDs that completed in FY 2010 have transitioned to programs of record (POR) and/or operational sustainment (93% successful transition). As of FY 2009, of 184 total AC/JCTDs, 64 have deployed in support of OEF/OIF covering the following Functional Areas: Battlespace Awareness, Command & Control, Force Application, Logistics, Protection, Net-Centric. Thirteen CENTCOM-sponsored AC/JCTDs deployed in OEF/OIF.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Adaptive Planning Pilot (APP)	2.400	2.400	-
Description: The Adaptive Planning Pilot (APP) JCTD is designed to provide Combatant Commanders with needed dynamic and agile force planning capabilities as outlined in the Adaptive Planning Road Map II. The APP JCTD will provide global force management tools for Adaptive Planning and Execution (APEX) users. The APP JCTD is a multi-year project sponsored by Joint Forces Command (JFCOM) . It will provide early capability to planners and force providers by providing additional services that are not present in the Global Command and Control System (GCCS) Family of Systems. The JCTD is a risk mitigation tool for the APEX program, providing valuable lessons learned from the Services Oriented Architecture (SOA) development approach. Completion for development and demonstration is planned for 2012. The Transition Manager is the Adaptive Planning (AP) Program Office in the Defense Information Systems Agency (DISA). The primary output will be the ability of COCOM and Joint Staff planners, as well as the military Services to conduct streamlined operations with the Global Force Provider (JFCOM) and			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
with members of the Joint Planning and Execution Community (JPEC).The primary metric is more accurate and timely global force management during planning and execution. ***FY 2010 Accomplishments:*** Completed Spiral 1 technical demonstration and limited operational assessment. Developed Spiral 2. ***FY 2011 Plans:*** Complete Spiral 2 technical demonstration 3Q FY 2011 and Operational User Assessment is planned for 1Q FY 2012. Transition functionality to configuration management and sustainment by the DISA Adaptive Planning Program Office. JCTD completes in April 2012.			
Title: Advanced Distributed Aperture System (ADAS) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for ADAS in FY 2008. ADAS is demonstrating and assessing the military utility of a multi-spectral suite of sensors on an H-60 helicopter to provide full spherical imagery to aircrew members via head-tracked, helmet mounted displays. This capability includes day/night pilotage, heads-up display with navigational/flight symbology data, multi-band threat laser warning, weapons symbology, partial brownout solution, and some hostile fire indications and friendly/enemy aircraft tracking information. ADAS will enhance aircraft survivability and aircrew situational awareness. During the developmental phases, ADAS Concept of Operations (CONOPS) and Tactics, Techniques, and Procedures (TTPs) will be developed and refined. ADAS is a multi-year project sponsored by US Special Operations Command (USSOCOM) with completion of development and demonstration by end of FY 2010. If the ADAS JCTD shows sufficient military maturity and utility, it will transition to a Program of Record (POR) under the USSOCOM Program Executive Officer for Rotary Wing. Army is the lead service. ***FY 2010 Accomplishments:*** Completed final system configuration and began flight testing. ***FY 2011 Plans:*** Complete flight test and Military Utility Assessment; support transition to Program Executive Office Rotary Wing.	5.700	-	-
Title: Airborne Weapons Surveillance System (AWSS) ***Description:*** The JROC validated the capability need for AWSS in FY 2007, the JCTD started in FY 2008. AWSS will demonstrate a capability to detect enemy artillery, rocket, and mortar fires, classify those fires, and relay locations of enemy firing units to coalition counter-fire systems. The JCTD will use advanced staring non-imaging infra-red wide field-of-view detectors, together with electro-optic video, aboard unmanned air vehicles. The efficiencies of the AWSS system will be: (1) percent of detections of artillery fires at ranges of up to 20 km; (2) location accuracy of hostile firing units; and (3) transmission time of hostile	2.700	1.560	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
fires and hostile firing locations to coalition counter fire units, in efficient machine readable formats. The sponsor of AWSS is U.S. Pacific Command, and Republic of Korea is the coalition partner. Operational management is from Commander US Forces Korea and Republic of Korea (ROK) Army. Technical lead is Army Aviation & Missile Research, Development and Engineering Center. Technical demonstrations will occur in Korea using ROK unmanned air vehicle (UAV). ***FY 2010 Accomplishments:*** Concluded the core AWSS JCTD. Residual capability available for Combined Forces Korea. Delivered operational utility assessments. Concluded concepts of operations. Supported residual operations. ***FY 2011 Plans:*** Support residual operations by Combined Forces Korea.			
Title: CORPORAL ***Description:*** The JROC validated the need for CORPORAL in FY 2008. The output of CORPORAL is to provide ground-based, deployed Marines and Soldiers with the capability to take full advantage of tactically relevant sensor data, command & control (C2), and electronic attack (EA) in near real time. Specifically, the capabilities will include Non-Traditional Intelligence Surveillance and Recognizance (NTISR) ,"on-demand" to the ground unit and beyond line-of-sight connectivity maximizing opportunity for collaboration or synchronization. Distributed operations demand faster responses and necessitate providing greater capability to existing aircraft rather than introducing new aircraft. Greater joint service capacity is needed from existing and planned EA assets and platforms. The efficiencies of CORPORAL will be to decentralize data to share openly across systems allowing airborne and ground-based tactical systems to be connected. The result is a greatly improved / expanded communications range and the ability to share critical data and information with other warfighters and higher authorities. This will provide the ground forces with a beyond-line-of-sight (BLOS) connectivity to ISR resources that they do not have today. This JCTD will provide a collaborative distributed data and information exchange framework based on existing and planned warfighters' communication waveforms. CORPORAL is a multi-year project sponsored by US Central Command with a planned transition by the Marine Corps in 2011. ***FY 2010 Accomplishments:*** Completed Technical Demonstration # 1A, critical design review for the Shadow Electronic Attack configuration, and initial system testing. ***FY 2011 Plans:*** Complete Technical Demonstrations 2 and the Military Utility Assessment and transition CORPORAL to PMA-234.	2.300	-	-
Title: Communications Air-Borne Layer Expansion (CABLE)	3.100	1.200	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The Joint Requirements Oversight Council (JROC) validated the need for CABLE in FY 2008. The outcome of CABLE is to demonstrate airborne networking for tactical Joint, Interagency, Intergovernmental and Multi-National (JIIM) users who lack mobile and dynamic connectivity throughout the full range of operations. CABLE will enable interoperability between air, land, and maritime domain communication systems; enable robust information sharing; and provide strategic communications reach back in an austere or over-subscribed Satellite Communications (SATCOM) environment. Outputs and efficiencies to be demonstrated include; (1) seamless interconnection of multiple air, maritime and land network coverage areas supporting voice and data; (2) cross-band and multi-routing-domain connectivity within and between coverage areas through IP routing; (3) the extension of command and control connectivity throughout the full range of operations; and (4) enhanced network services for voice, video and data communications over a common IP network. U.S. Strategic Command (USSTRATCOM) and U.S. Joint Forces Command (USJFCOM) are the sponsors. US Navy is the lead service; US Air Force is the supporting service. Transition to the Service Programs of Record (POR) is in FY 2011. ***FY 2010 Accomplishments:*** Conducted operational demonstration and Operational Utility Assessment. Finalized planning for operational demonstrations and Operational Utility Assessment. Technical management and lead service shifted to Navy when Air Force Objective Gateway program was canceled. Completed transition agreements with Navy and USAF program offices as well as with industry partners that have aerial layer networking related programs and products. Transition items included networking and routing software suites, technical and operational documentation, concepts of operations and network architectures. Transition efforts were led by Air Force Global Cyberspace Integration Center and Navy Program Executive Office Command, Control, Communications, Computers, and Intelligence (PEO C4I). Supported Joint Aerial Layer Networking Analysis of Alternatives. ***FY 2011 Plans:*** Complete Operational User Evaluation and finalize technical documentation for transition partners. Support transition of CABLE demonstrated technologies. Transfer final documentation and concept of operations to COCOM sponsors and service command elements. Complete transition to the Services. Support Joint Aerial Layer Networking Analysis of Alternatives. Complete the JCTD.			
Title: Counter Intelligence - Human Intelligence Architecture Modernization Program, Intelligence Operations Now (CHAMPION) ***Description:*** The JROC validated the capability need for CHAMPION in FY 2006. The outcome provides improved capabilities for the counter-intelligence (CI), human-intelligence (HUMINT) and Special Forces communities of interest. These improvements offer an accessible and actionable information system for the management of the CI/HUMINT collection, mission planning and asset management information. The capabilities include technologies to integrate structured and un-structured reports, entity extraction and tagged geospatial information. The primary outputs demonstrated were: (1) joint data standard for human	0.480	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
domain; (2) CHAMPION information collection tool and associated concept of operations (CONOPS) and tactics, techniques and procedures (TTPs); (3) CI/HUMINT mission management tools with federated search capability and data replication/access across multiple networks; and 4) integrated geo-tagged photo extraction, CI/HUMINT data access tools for multi-intelligence discipline fusion. The efficiencies gained are; (1) improved effectiveness of CI/HUMINT operations; (2) elimination of human domain data stovepipes; 3) joint human domain data standard; (4) improved web-enabled data access across multiple networks and security levels; (5) Joint CONOPs/TTPs; (6) geo-spatially enabled mission and asset management tools; (7) prototype voice biometrics standards, architecture and operational concepts. The transition strategy is to incorporate CHAMPION capabilities into the Distributed Common Ground Station Army program of record. Additional CHAMPION products are also transitioning to PM TENCAP and PM CHARCS. The sponsoring Combatantant Command is the U. S. Central Command (CENTCOM). Other organizations involved as participants, users of capabilities, and/or observers include USSOCOM, USJFCOM, Defense Intelligence Agency, and the National Security Agency. The lead service is the Army. ***FY 2010 Accomplishments:*** CHAMPION completed and transitioned the Coordinate Operational Resources for Voice Exploitation Technology (CORVET) Initiative to DoD PM Biometrics who is integrating CORVET's Rome Audio Processing Tool-Release (RAPT-R) and Falcon (both voice processing and matching functions) into the Biometric Automated Toolset - Modified (BAT-M). CORVET introduced voice-matching capability to augment existing biometrics acquisition, exploitation, and processing systems.			
Title: Common Ground ***Description:*** The JROC validated the need for Common Ground functionality in FY 2009. The objective is to achieve Joint or Coalition capability to interoperate on common ground geospatial data and C2 data and information and to have shared awareness to achieve unity of adaptive planning, execution and effects within C2 enclaves. Common Ground is built upon existing DoD net-centric data and Service Oriented Architecture (SOA) standards and guidance, as well as international standards adopted by the US to address information exchange (i.e., Joint Consultation, Command and Control Information Exchange Data Model - JC3IEDM). Common Ground will enable the sharing of digital orders and plans across C2 systems and a reduction of errors and misunderstanding among distributed systems. All Common Ground capabilities will be incorporated as commercial software under a DoD Enterprise License. Common Ground is sponsored by USJFCOM. The US Army Engineering Research Development Command is the technical lead agency, the National Geospatial Agency functions as transition agent. The NATO Consultation, Command and Control Agency (NC3A) serves as technical experts and liaison between NATO's systems and the US systems. ***FY 2010 Accomplishments:***	6.200	6.496	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Demonstrated commercial geospatially-extended NATO standard Joint Consultation, Command and Control Information Exchange Data Model (JC3IEDM) supporting Joint and multinational interoperability. Demonstrated common NATO and US analytic services in Joint C2 Systems. Drafted JC3IEDM specification extension to US and international JC3IEDM standards. Produced test reports on architectural stability and documented interim user juries to facilitate a user centric design for the components and information products. Performed initial operational user assessment between US and NATO to validate assumptions on C2 efficiencies, model architectures and baseline interoperability, network and architecture metrics. Conducted assessments on Tactical Spatial Object tools. Delivered geospatial tools for inclusion in the Commercial Joint Mapping Tool Kit. Demonstrated Common Ground tools in Coalition Warfighter Interoperability Demonstration. ***FY 2011 Plans:*** Conduct final operational assessment. Award DoD Enterprise contract for analytic and interoperability software. Initiate Doctrine, Operations, Training, Materials, Logistics, Personnel, Facilities (DOTMLPF) activities. Complete documentation for enterprise licensing of functionality in NGA Commercial Joint Mapping Toolkit (CJMTK). Complete the JCTD.			
Title: Riverine & Intercoastal Operations (RIO) ***Description:*** The JROC validated the capability need for RIO JCTD in FY 2009. RIO will demonstrate and transition technologies and operational concepts for persistent situational awareness in the Intercoastal and Riverine areas. RIO will demonstrate the value of remotely monitoring maritime areas of interest with U.S. Navy and international (Colombia) partners. RIO will enable situational and Maritime Domain Awareness through unattended surveillance and advanced reconnaissance of the riverine environment from a Mobile Operating Base (MOB), supporting the Battlespace Awareness and Force Protection capability areas. Persistent detection and monitoring of riverine activities will be accomplished through networked Unattended Ground Sensors (UGS) and sensor data used to enhance localized situational awareness. U.S. Southern Command is the Operational Manager, Naval Surface Warfare Center Dahlgren Division is the Technical Manager and Program Executive Office Littoral Mine Warfare - Antiterrorism/Force Protection (PMS-480) is the Transition Manager. The Naval Expeditionary Combat Command (NECC) and Naval Special Warfare community provide U.S. Navy support for RIO. The first operational demonstration will occur within the Continental US (CONUS) and will focus on the non-jungle element of RIO which is of interest to both the U.S. Navy and the Department of Homeland Security (DHS). This first increment will conclude with an Operational Utility Assessment performed by the Operational Test and Evaluation Force (OPTEVFOR). The second RIO increment will focus on the jungle environment outside CONUS (OCONUS) with Colombia in FY 2011. It will culminate with a technical demonstration and Letter of Observation provided by OPTEVFOR. ***FY 2010 Accomplishments:***	3.200	2.400	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Defined requirements and conceptual operations for US Navy. Selected and technically demonstrated baseline technology solution set during TD-0 (sensors, communications and COP) in Panama. Drafted the Information Exchange Agreement (MIEA) and other supporting agreements between U.S. and Colombia. ***FY 2011 Plans:*** Conduct technical and system integration discussions with Colombia. Integrate RIO aboard Colombian Riverine Support Vessel. Technically and operationally test and demonstrate RIO in the Intercoastal environment through formal Limited Operational Utility Assessment. Spiral capability to the U.S. Navy , DHS and Colombia. Transition RIO from U.S. to Colombia following successful demonstration. Begin transition to U.S. Navy. Complete the RIO JCTD.			
Title: Future Immersive Training Environment (FITE) ***Description:*** The JROC validated the capability need for FITE JCTD in FY 2008. FITE JCTD will demonstrate advanced virtual training technologies for small units. It will provide a common software training environment for a variety of different training hardware configurations including Virtual Reality, Fixed-Base Mixed Reality and Augmented Reality. FITE JCTD has two spiral demonstrations. The first spiral successfully demonstrated an individual worn Virtual Reality system at Camp LeJuene and Fort Benning. The second spiral will demonstrate advanced Mixed Reality technologies for fixed location training facilities at the Marine Corps' Infantry Immersion Trainer (IIT) and the Army's Combined Arms Collective Training Facility (CACTF). Spiral Two equipment will include a see-through Helmet Mounted Display that will project realistic virtual characters into the training environment. The sponsor and Operational Manager is USJFCOM ***FY 2010 Accomplishments:*** Completed integration of Spiral 2 components for demonstration phase including Facility Based Mixed Reality and Augmented Reality demonstration systems for USMC and Army. Conducted Spiral Two Operational Demonstrations in September 2010 at USMC and October 2010 at Army facilities. Published FITE JCTD final Operational Utility Assessment report and informed applicable Service Programs of Record (POR) of the results. Completed the core FITE JCTD. ***FY 2011 Plans:*** Support COCOM post-FITE JCTD residual activities leading to Service Programs of Record (POR) transition.	5.200	-	-
Title: National Senior Leadership Decision Support Service (NSLDSS) ***Description:*** The JROC validated the need for NSLDSS in FY 2008. NSLDSS provides senior decision-makers a method to develop rapid situation awareness to support response planning and execution to time-critical events of national significance. Current processes rely heavily on teleconferences, resulting more time spent on discovery than decision-making. NSLDSS is a combined hardware and software system consisting of DoD and commercial databases, search engines, source repositories,	3.000	3.000	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
network enterprise services, policy decision services, enterprise universal data descriptor , visualization tools, and web 2.0 capabilities. The primary outputs and efficiencies to be demonstrated are: (1) improved global situational awareness for senior leadership; (2) improved course of action options; and (3) improved quality of information for senior leader decision-making in a collaborative environment. The user sponsor is the Joint Staff J3 National Military Command Center (NMCC) and the Lead Agency is DISA. ***FY 2010 Accomplishments:*** Conducted Spiral 2 - Improved course of action options and decision making by integrating web services that support identification and visualization of available assets and resources. Conducted technical product integration, testing, and demonstrations including a Limited Operational Utility Assessment (LOUA). ***FY 2011 Plans:*** Conduct Operational Demonstrations and complete the Operational Utility Assessment (OUA). Complete the transition to DISA Program of Record. Complete JCTD.			
Title: Global Observer (GO) ***Description:*** The JROC validated the capability need for GO in FY 2007. The GO JCTD is a transformational program to demonstrate liquid hydrogen powered unmanned aerial vehicle, using a modified, internal combustion engine, capable of flying extremely long endurance (objective of 6 days on station) with a moderately sized payload capacity (380 lbs) at an altitude of 55-65,000 ft. above mean sea level. GO will provide low-cost persistent surveillance (ISR) and communications relay. The efficiencies of GO will be a long endurance capability that support s placing a system into theater from garrisoned locations, reducing the number of forward bases required for world-wide operations and relieving the optempo from other overstressed assets. Transition Strategy: GO will transition to Air Force Special Operations Command for extended use to support intelligence, surveillance, and reconnaissance with the persistent operations using the Eectro-Optics/Infrared and communications relay payloads. Pending JROC validation of the capability requirement, the Air Force Air Combat Command will transition GO to the Combined Air Force. ***FY 2010 Accomplishments:*** Completed aircraft #1 for first flight configuration (battery powered) at Edwards Airforce Base; Flight Readiness Review completed; Started aircraft #2 and aircraft #3 integration; Completed first flight test of aircraft #1. ***FY 2011 Plans:***	2.856	4.500	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Complete flight demonstrations with aircraft #1. Additional JCTD Program funding in FY 2011 is contingent upon a user interest in a particular flight demonstration (such as a particular endurance at a given altitude with a given payload weight), to be followed by the user intent to fund follow-on use of the aircraft if the particular demonstration succeeds.			
Title: Hard Target Void Sensing (HTVS) Fuze ***Description:*** The JROC validated the capability need for HTVS Fuze in FY 2008. The objective of the HTVS Fuze JCTD is to provide the Bomb Live Unit-109 (BLU) and BLU-113 legacy warheads the ability to count voids and detonate at the optimal point, and improve weapon survivability and function in hard target environments. The JCTD will provide warfighters a proven capability with a number of residual mission ready fuzes. The acquisition strategy allows a smooth transition from the JCTD to Engineering Manufacturing and Development (EMD) in FY 2011 followed by production. The lead Combatant Command is USTRATCOM and the Lead Service is USAF. To date, the HTVS Fuze JCTD has accomplished the following: Sufficiency review for FY09 initiative to fund JCTD complete; Sufficiency review for SDD, Production and Sustainment completed; Acquisition Strategy for entire HTVSF Program Approved; Systems Requirements Review and Systems Functional Review for both contractors; Management and Transition Plan approved. The JCTD will provide warfighting commands a proven capability with a number of residual mission ready fuzes no later than 12 months after the JCTD. The acquisition strategy allows a smooth transition from the JCTD to Engineering Manufacturing and Development (EMD) in FY 2010 followed by production. The U.S. Navy also has a requirement for this capability and provided FY09/10 funds to support the JCTD. The lead Combatant Command is USTRATCOM and the Lead Service is the USAF. ***FY 2010 Accomplishments:*** FY 2010 Accomplishments: Completed all sled and flight testing. Conducted final operational demonstrations. Completed Operational Utility Assessment (OUA) and Military Utility Assessment (MUA). Completed study to incorporate new requirements for the Capability Development Document.	6.000	-	-
Title: Internet Protocol Router in Space (IRIS) ***Description:*** The JROC validated the need for capability for IRIS in FY 2007. IRIS uses a planned launch of a commercial communications satellite to introduce Internet Protocol (IP) routing and cross-banding between C-band and Ku-band transponders. USSTRATCOM seeks to improve network reliability and availability through dynamic topology updates (multiple transport paths) and improved collaboration and interoperability among infomation sources and users (e.g., sensors, soldiers, command centers at Joint, Allied and Coalition levels). The IRIS outputs and efficiencies include: (1) demonstrate the capability to collaborate with industry in leveraging the commercial acquisition processes to provide near-term, space-based, IP routing network capability; (2) demonstrate the capability via a commercial payload to conduct on-board IP packet routing communications from a geostationary orbit; (3) explore and incorporate a decision process to determine military user assignment	0.600	-	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
to commercially provided IRIS SATCOM capability. The Defense Information System Agency (DISA) is the DoD lead Agency for obtaining commercial satellite communications support for operations, will develop a provisioning model for future assignment of military users to the demonstrated commercial capability as appropriate, and define contracting language for future services subscription in support of operations, including integration of IRIS services into existing network architectures beyond the IRIS JCTD. ***FY 2010 Accomplishments:*** Participated in the industry led end-to-end IRIS technical capabilities demonstration with representative hardware prior to Intelsat General IS-14 launch. Conducted operational and network services demonstrations with representative military and joint, inter-Agency users. Extended industry SATCOM-based IP-routed services for continued evolution of network services provisioning and management processes, potential billing procedures, and industry-government organizational and technical interfaces. Introduced the functionality to international partners through USAFRICOM sponsored capacity building demonstrations. Completed the final operational utility assessment and produced the final assessment report.			
Title: Joint Enable Theater Access Seaports of Debarkation (JETA-SPOD) ***Description:*** The JROC validated the need for JETA-SPOD capabilities in FY 2006. JETA-SPOD will develop and demonstrate: a Lightweight Modular Causeway System (LMCS) transportable by and employable from intra-theater sealift vessels such as the JHSV or other current Army/Navy watercraft; and an austere port Decision Support Tool for selection of optimal sites from multiple austere Seaports of Debarkation (SPOD) options. The JCTD will optimize the use of the Joint High Speed Vessel (JHSV), current Army/Naval watercraft, and Lines of Communication bridging requirements by providing more rapid flow of combat power and sustainment through multiple theater austere seaport locations. This provides Joint/ Combined Force commanders a means to mitigate anti-access activities and increases flexibility to conduct operational maneuvers from strategic distances. JETA-SPOD sponsor is U.S. Pacific Command. The lead Service is Army. The primary outputs and efficiencies are: the LMCS will reduce weight and volume by 50 percent ; a reduction in deployment time by 50 percent; and elimination of in-water connections; the Decision Support Tool capability is an increase in availability of throughput prediction information for 50-80 percent of worldwide small ports; and the combination of LMCS and the Decision Support Tool includes a five-fold increase in the number of JHSV-compatible ports and doubling of the port throughput rate. The transition strategy for LMCS and the Decision Support Tool is to transition to Programs of Record: Product Director, Army Watercraft Systems (PD AWS) and USTRANSCOM, respectively. ***FY 2010 Accomplishments:***	0.600	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Completed Lightweight Modular Causeway System (LMCS) advanced sea state testing, demonstrated emplacement via rotary wing delivery and use during river crossing operations. Finalized CONOPS documentation. Initiated transition of LMCS as part of Vessel to Shore Bridging solution to Product Director, Army Watercraft Systems (PD AWS). Completed JETA-SPOD ACTD.			
Title: Joint Force Protection Advanced Security System (JFPASS) ***Description:*** The JROC validated the capability need for JFPASS in FY 2008. JFPASS provides a comprehensive, effective, and sustainable Joint force protection capability. JFPASS will demonstrate and transition an integrated joint force protection Command and Control architecture, providing rapid situation awareness, decision support, and more effective force protection with reduced workload through systems integration. The primary outputs and efficiencies: 1) numbers of currently distinct force protection systems that are integrated for common situation awareness; 2) decreased time required to provide situation awareness to all in chain of command with force protection response missions; 3) decrease in operations center manning and workload required to maintain force protection situation awareness and manage situation responses. JFPASS is sponsored by US European Command. The project will conduct an initial demonstration and limited assessment after one year, to be followed by in-theater installations and operational utility assessment in the second year. Army, Navy, and Air Force force protection experts are participating. The US Navy is providing the Technical Manager, US Air Force provides the deputy Technical Manager, and US Army provides the Transition Manager. This project is aligned with the Joint Staff Installation Unit Base Integrated Protection Capabilities Based Assessment process. ***FY 2010 Accomplishments:*** Completed utility assessment. Completed JCTD with capability fielded at Spangdahlem AFB, Germany.	4.200	-	-
Title: Joint Surface Warfare (JSuW) ***Description:*** The JROC validated the capability need for JSuW in FY 2007. The JSuW JCTD will allow multiple existing Intelligence, Surveillance, and Reconnaissance (ISR) assets, launch platforms, and standoff weapons to communicate via maturing weapons data link network technologies. The efficiency is: Joint ISR platforms can provide initial targeting data and in-flight targeting updates to standoff weapons while the launch platform either remains beyond or decreases time inside the threat envelope. As a result of this interaction via the weapons data link network, the Combatant Commander wil have multiple options for joint kill chains to increase operational agility, and have significantly extended space in which surface targets may be successfully prosecuted. ***FY 2010 Accomplishments:***	1.200	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Completed ground and flight testing of J-11 message set installations on JSTARS, LSRS, A/F-18, and JSOW-C1. Completed military utility assessment. Software configurations were transitioned to appropriate Programs of Record.			
Title: MASINT Tactical Intelligence Fusion (MASTIF) ***Description:*** The JROC validated the capability need for MASTIF in FY 2006. MASTIF will provide the warfighter with a data fusion capability to enable a single operator to exploit a suite of multi-disciplined sensors against concealed/obscured targets in near real-time while: (1) Enabling a single operator with minimum time over target to rapidly detect, identify, and geolocate potential targets using automated sensor fusion and reasoning; (2) Reducing sensor false alarm rates by combining multiple types of intelligence sensor outputs; (3) Increasing operator efficiency by improving situational awareness through automated sensor management and pointing; (4) Eliminating the need for the operator to gain expertise on each individual sensor; and (5) Providing an open architecture design that can be adapted and tailored to different mission applications and operational environments. The project sponsor is United States Southern Command (USSOUTHCOM), which also serves as the Operational Manager. The lead DOD agency is the Defense Intelligence Agency (DIA) and the Transition Manager is United States Special Operations Command (USSOCOM). ***FY 2010 Accomplishments:*** Transferred residuals to SOUTHCOM. Customized system for installation on user partner platform. Continued development of CONOPs and TTPs, based on user feedback. Capabilities transitioned to user community.	1.200	-	-
Title: Medusa ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for Medusa in FY 2008. Medusa will demonstrate the employment of the Low Cost Guided Imaging Rocket (LOGIR) aboard the US Navy MH-60S helicopter against a multi-axis simultaneous attack from Fast Attack Craft (FAC) and Fast Inshore Attack Craft (FIAC). In this manner, US and coalition surface ship formations can protect themselves against coordinated asymmetric threats in a maritime environment. This capability will provide a leap ahead of current ship self-protection options, and contribute to a multi-layered, scalable maritime defense strategy. Additionally, the technology is readily adaptable for use against land-based targets. COCOM sponsor is US Central Command and lead Service is the US Navy. ***FY 2010 Accomplishments:*** Completed the design and integration of the launcher and rockets aboard the MH-60 aircraft. Completed preliminary demonstrations. ***FY 2011 Plans:***	4.304	4.326	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Complete critical design review of rocket launcher. Complete SIL testing of H-60 software configuration. Complete rocket and launcher integration and flight test and military utility assessment. Complete Milestone B documentation and SD&D contract package to support transition of Medusa rocket and launcher designs, software, CONOPS, and TTPs to PORs. Complete transition of Medusa to PMA-242 and PMA-299.			
Title: Net Zero Plus (NZP) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for NetZero Plus (NZP) in FY 2008. NZP JCTD will demonstrate and assess reduced fuel demand, improved infrastructure and alternative energy supply seamlessly to the warfighter. This will be accomplished by reducing external fuel requirements for facilities/forward operating bases and reducing risk to coalition lines of communication by reducing delivery of fuel to bases and facilities by soldiers, sailors, airmen, and marines. NZP leverages research and development from federal and private labs and COTS/GOTS technology in innovative power generation and distribution, energy efficient enduring and expeditionary structures, efficient lighting and renewable energy. The combined capabilities will establish an energy efficient Forward Operating Bases blueprint used by tactical elements, operational commanders, theater planners, interagency organizations, and coalition partners. The emphasis will be on replacing or improving current facilities with energy efficient structures and integrating renewable energy technologies with improved energy generation to power those structures. NZP sponsor is U.S. CENTCOM. The lead Service is the Army with Air Force and Marine Corps as participants. The primary outputs and efficiencie are: the performance of alternative structures, distribution and supply with metrics measuring the number of kilowatts used with a goal of 40 percent reduction the first year, 50 percent in the second year and 60 percent the third year. Demand, Infrastructure, and Supply technologies are planned for transition to Mobile Electric Power Program of Record, PEO (Combat Support and Combat Services Support) Force Provider Program of Record, Air Force Basic Expeditionary Airfield Resources (BEAR), and placed on the General Services Administration (GSA) Schedule or Defense Logistics Agency (DLA) acquisition. ***FY 2010 Accomplishments:*** Installed a two-story energy efficient dome, expanded intelligent power distribution with installation of a 1 megawatt microgrid, added a Waste to Energy system, and integrated Alternative Power source at National Training Center (NTC). Continued data collection and analysis; Conducted Military Utility Assessment; Net Zero-Plus provided information to the strategy and roadmap for FOBS forward operating bases (FOB) and U.S. installations. ***FY 2011 Plans:*** Complete data collection and assessment and finalize military utility assessment for final Net Zero-Plus strategy and roadmap.	2.400	-	-
Title: Transnational Information Sharing - Cooperation (TISC)	3.000	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The Joint Requirements Oversight Council (JROC) validated the capability need for TISC in FY 2008. TISC will provide software tools for a non-classified portal for collaboration, planning and assessment by external partners and interagency organizations. TISC capability allows disadvantaged users to use the portal at low or no cost in austere and minimal network infrastructure environments. This capability will provide collaborative chat, identity management, translation and multi-lingual text chat and Web 2.0 social networking tools. Outputs and efficiencies will include improved planning and response to theater security cooperation challenges and stability and reconstruction operations. Technologies demonstrated will reduce the time and increase the effectiveness of disaster relief, humanitarian assistance and stability operations where DoD, interagency, non-governmental organizations, international organizations, coalition nations and other first responders need to cooperatively act, plan and assess courses of action. USEUCOM and USSOUTHCOM are sponsors. Requirements and operational assessment will include external partners outside of DoD in the TISC community of interest. The TISC capability (operational concepts, tactics and procedures) will transition to the Theater Security Cooperation community, while the sustainment of the information sharing portal will become the responsibility of DISA using a fee for service model. The lead COCOM responsibilities are jointly shared between the US Southern Command (SOUTHCOM) and the US European Command (EUCOM) and the lead agency is the Defense Information Systems Agency (DISA). TISC is a multi-year JCTD that will conclude in 2011. ***FY 2010 Accomplishments:*** Demonstrated and operationally assessed TISC in the Haiti earthquake relief effort. ***FY 2011 Plans:*** Transition TISC portal to DISA as an Enterprise fee-for-service model.			
Title: One Box One Wire (OB1) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the need for OB1 in FY 2009. OB1 will provide a secure operating system separation kernel, virtual machine technology, and encrypted network communications path to enable a user to access multiple computer networks and information services operating at different levels of security from Top Secret to Unclassified from a single computer workstation. OB1 consolidates the network infrastructure from multiple terminals and network cabling at individual workstations to a single terminal connected to multiple data centers via one wire (network cable) — one box, one wire, multiple network and security domain access. The OB1 output will be formally evaluated and certified information security products pursuant to the combined DOD Intelligence Community Cross Domain Solution evaluation process managed by the Unified Cross Domain Management Office (UCDMO) and accredited for use in a broad spectrum of operational environments. The primary efficiencies include significantly reduced physical infrastructure , time and manpower savings in establishing mission networks, and savings in power, air conditioning, and other base/installation/office operating requirements. OB1 plans for a final demonstration and assessment in the fourth quarter of FY 2011. OB1 is sponsored by USCENTCOM.	6.000	6.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Completed Implementation Directive and Requirements Documentation. Completed CONOPS and TTP. Conducted technical demonstration of first OB1 case and evaluated initial artifacts. Continued security assurance evaluation, network systems and security engineering and implementation planning of the remaining test cases. Expanded to encompass three Separation Kernel vendors. Completed acquisition of test suites from each of the major vendors. Transition manager is Air Force Cryptologic Systems Group. ***FY 2011 Plans:*** Complete technical demonstrations of test cases and evaluate artifacts. Continue to focus on integration with the OIS “one wire” products. Complete test articles that attempt to address the full range of CENTCOM requirements. Document test concepts and plans for the test articles that may accelerate C&A activities. Complete certification and accreditation documentation suite in support of a certification action to be taken during the transition period. Provide a report that summarizes the technical results, identifies alternative ways forward and makes technical recommendations. The SPAWAR 5.8 team will continue to engage NSA, DIA and other pertinent agencies to ensure test artifacts and results are within their acceptable parameters. Complete the JCTD.			
Title: Mission Assurance Decision Support System (MADSS)	1.272	1.212	-
Description: The Joint Requirements Oversight Council (JROC) validated the need for MADSS in FY 2009. The expected output is a standardized framework and global capability for Commanders C2-related anomaly response and execution, and defense support to civil authorities. MADSS will provide integrated C3 Operational and critical infrastructure relationships understanding by correlating data from different data sources, using web-based services, secure network and automated data transformation services. MADSS final demonstration and assessment will occur in the third quarter of FY 2011, with transition to Defense Information Systems Agency programs of record in the fourth quarter of FY 2011. The expected efficiencies are improved responsiveness and proactivity through integrated real-time communications anomaly data feeds, telecommunications infrastructure analysis and assessment data, and a mission area knowledge base for rapid event analysis and Warfighter analysis of alternatives development. MADSS is sponsored by USSTRATCOM. The Defense Information Systems Agency (DISA) is the lead agency. NSWC Dahlgren is the technical lead. ***FY 2010 Accomplishments:*** Developed communication path to mission linkages. Developed knowledge base architecture and SOA design. Defined Authoritative Data Sources. Developed standard data format and semantic mediation services among information feeds. Conducted technical demonstrations and limited operational demonstrations. Finalized operational and system architectures. Completed Spiral 2. ***FY 2011 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Conduct final technical demonstration. Conduct operator training. Conduct final operational demonstrations and utility assessment (August 2011). Finalize documentation and transition MADSS functionality to DISA program of record in Program Executive Office – Mission Assurance. Complete the JCTD.			
Title: Joint Recovery and Distribution System (JRaDS)	3.000	3.600	-
Description: The Joint Requirements Oversight Council (JROC) validated the capability need for Joint Recovery and Distribution System (JRaDS) in FY 2009. JRaDS will develop and demonstrate the military utility of a new family of transportation trailers. JRaDS provides a trailer Family of Systems (FoS) which enables execution of multiple missions via a small number of trailer variants versus the large inventory of distinct type trailer systems currently in DoD inventory. This FoS will offer high reliability and parts commonality and modularity in design thus reducing Service logistics and maintenance requirements and associated costs of ownership. Additionally, supporting personnel may be reduced due to the semi-autonomous operating capability of JRaDS, and reduced need for supplementary Materiel Handling Equipment (MHE) . These aspects will expedite cargo movement from Sea Ports of Debarkation (SPOD), Aerial Ports of Debarkation (APOD), and Theater Supply Depots to front-line users, while reducing costs associated with movement of cargo within theater. JRaDS will also afford an expeditious and efficient method of recovering disabled and catastrophically damaged Tactical Wheeled Vehicles (TWV) and light to medium weight Rotary Wing aircraft. The JCTD will also produce an Aircraft Interface Kit (AIK) that allows Army Container Roll-On Platforms (CROP) and Flat Racks to be expeditiously loaded into C-130 and C-17 cargo aircraft. The efficiencies are: JRaDS reduces the time, vehicle and manpower requirements for Tactical Wheeled Vehicle recovery by 50 percent. JRaDS will reduce MHE requirements by 20 percent during operations in an austere environment and improve theater cargo velocity by 20 percent. By having a standardized FoS trailer fleet with common replacement parts, in-service effectiveness will improve by 20 percent and parts inventory and costs will be reduced by 50 percent. The transition strategy is to have Program Executive Office Combat Support/Combat Service Support (PEO CS/CSS) become the Joint Program Manager to procure and manage the supply of needed JRaDS trailers to the Services. Residual trailers from the JCTD will be used by field units thereby placing the JRaDS capability into forces sooner than waiting for production of trailers. The sponsor is the U. S. Transportation Command (USTRANSCOM). The lead service is the Army. ***FY 2010 Accomplishments:*** Conducted three technical assessments and one operational assessment. Deployed four 40-ton trailers to Afghanistan for operational use as requested by the Army to fulfill an immediate operational need. Demonstrated the 34-ton trailer for engineer support use and prepared for aircraft interface and Port Opening Operational Assessment. ***FY 2011 Plans:*** Conduct final Operational Assessment. Submit final Operational Utility Assessment Report; Complete Capability Development Document (CDD); Transition to PEO CS/CSS.			
Title: Joint Medical Distance Support & Evacuation (JMDSE)	1.368	0.740	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The Joint Requirements Oversight Council (JROC) validated the capability need for JMDSE in FY 2009. JMDSE will demonstrate capabilities needed to mitigate problems associated with low density, high demand casualty evacuation forces; providing virtual/distant triage capability on a noncontiguous battlefield; extending care of medical forces; and providing medical reach-back from first responder to forward resuscitative care facilities. The primary outputs include battlefield telemedicine and precision aerial delivery of small quantities of critical medical supplies and equipment for casualties in hostile and inaccessible areas. The efficiencies gained include: less costly and timelier delivery of critical medical supplies and casualty care equipment; improved battlefield care of casualties; reduced health risk to personnel on the battlefield. The transition strategy includes inclusion of precision aerial medical delivery systems, medical kits, and telemedicine capability in theater-based programs of record. The sponsor is US Joint Forces Command and the executive agent is OSD Health Affairs. ***FY 2010 Accomplishments:*** Identified and selected competitive prototype contracts for Joint Precision Aerial Delivery System-MedEx (JPADS-MedEx) for both Micro-Light and Ultra-Light Weight (MLW & ULW) systems; completed multiple technical test for Joint Combat Casualty Care System (JCCCS); conducted operational demonstrations #1 and #2 for precision aerial delivery; conducted limited operational utility assessment; and executed spiral development #1 for JPADS-MedEx. ***FY 2011 Plans:*** Conduct operational demonstration #3 to fully integrate JCCS and JPADS-MedEx (ULW and MLW) systems; conduct final operational utility assessment; execute spiral development #2; and complete final report and training documents.			
Title: Cooperative Security Engagement (CSE) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for CSE in FY 2009. CSE will demonstrate operational concepts and tools for enabling joint, multi-national planning, coordination and synchronization. CSE will provide a framework for improved inter-agency adaptive planning, regional/event based information sharing, and integrated event assessment. The JCTD sponsor is U.S. Southern Command (USSOUTHCOM) with U.S. European Command (USEUCOM), and U.S. Agency for International Development (USAID) as co-sponsors. Technical lead is the U.S. Army Corps of Engineers. Transition will incorporate CSE capabilities into COCOM stability operations, including concepts of operation (CONOPs) and policy recommendations. JFCOM is the transition lead. The primary outputs and efficiencies to be demonstrated in the Operational Utility Assessment are: (1) improved interagency adaptive planning; and (2) streamlined regional and inter-agency assessment. ***FY 2010 Accomplishments:*** Integrated architecture, interagency assessment plan; identification of planning, information sharing and assessment tools, initial operational concepts. Technical demonstration 1 of software solutions. ***FY 2011 Plans:***	0.600	3.500	1.305

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Technical Demonstration 2 in an operational context of tools and concepts with the cooperative security community of interest in selected regions within USSOUTHCOM / USEUCOM / USAID areas of responsibilities. The Operational Utility Assessment will be completed. Interagency Tactics, Techniques and Procedures will be developed. ***FY 2012 Plans:*** Transition to USJFCOM and USAID.			
Title: Daily Watch ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for Daily Watch in FY 2009. Classified content only. U.S. European Command is the lead CoCom. National Reconnaissance (NRO) is the lead agency. ***FY 2010 Accomplishments:*** Classified content only. Conducted technical and operational demonstrations. Closed out JCTD. No additional JCTD investment projected, pending transition activities.	5.200	-	-
Title: Precision Acquisition Weaponized System (PAWS) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for PAWS in FY 2009. PAWS will integrate multiple precision weapons aboard organic tactical ISR platforms, and demonstrate neutralization of threats. The weapon designs will allow multiple kills per sortie and engagement in environments where collateral damage and fratricide are unacceptable. This program will resolve the inability of Special Operating Forces (SOF) Intelligence, Surveillance, and Reconnaissance (ISR) platforms to prosecute targets. Currently, these platforms relay target data to SOF on the ground, who must then engage the targets directly. In the current process, the risk to SOF is increased greatly. The PAWS JCTD will alleviate this risk. Deliverables will include documented Concept(s) of Operation, Tactics, Techniques, and Procedures, software and hardware changes to demonstration platforms and weapons. Following the demonstration, fieldable prototypes will be made available to operational SOF units in their respective theaters. Tactical ISR system programs of record will make the changes necessary to incorporate this platform-independent technology. The Combatant Command/User Sponsor is the U.S. Special Operations Command (SOCOM) and the Lead Service/Agency is the U.S. Special Operations Command (SOCOM). ***FY 2010 Accomplishments:*** Established preliminary Concept of Operations (CONOPS), Tactics, Techniques, Procedures (TTP) Development, demonstrated weapon link operations, conducted several safety assessments, conducted two technical demonstrations of UAS-weapon integration and weapon release (several variations of inert and live fire test configurations) using surrogate launch tubes. ***FY 2011 Plans:***	5.188	1.200	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Finalize host launch tube and complete UAS integration. Low collateral damage testing, certification, and integration with host UAS. Conduct end-to-end system testing, and two Operational Demonstrations. Transition planning and execution of residuals to USSOCOM/PEO-FW. The Transition Manager is NAVAIR 4.5.			
Title: Counter-Electronics High Powered Microwave System Advanced Missile Project (CHAMP) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for CHAMP in FY 2009. The objective of CHAMP is to demonstrate and assess a multi-shot and multi-target aerial HPM platform that is capable of degrading, damaging, or destroying electronic systems. For this effort a compact HPM payload will be integrated into an appropriate aerial vehicle to create the aerial HPM platform demonstrator. CHAMP is a multi-year project under sponsorship of United States Pacific Command (USPACOM), with completion of integration and final demonstration in FY 2012, and transition to an Air Combat Command program of record in POM FY 2012-2016. The primary outputs and efficiencies to be demonstrated in the JCTD Military Utility Assessment (MUA) are: (1) Delivery of the HPM aerial system to the target; (2) Minimum effectiveness HPM range; (3) Stand-off distance from launch to target; (4) Multiple geographically separated targets; and (5) Navigation, orientation, and fuzing accuracy. The Air Force Research Laboratory, Directed Energy Directorate, High Power Microwave Division is the designated Technical Manager. ***FY 2010 Accomplishments:*** Developed Concepts of Operations (CONOPs) and Tactics, Techniques, and Procedures (TTPs). Developed training, test and security plans. Began component systems integration and operator training. Completed critical design review and conducted ground testing. ***FY 2011 Plans:*** Complete component integration and ground testing. Complete operator training. Refine CONOPs and TTPs. Complete operational demonstration #1 to demonstrate the ability to accurately navigate to a target building and illuminate the building to ensure effects on the internal electronic components at a distance from the target to be a viable military option. Develop requirements and documentation to support transition. ***FY 2012 Plans:*** Complete flight test, military utility assessment and documentation in support of transition to POR.	7.200	6.000	3.600
Title: Joint Multi-Effects Warhead System (JMEWS) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for JMEWS in FY 2009. The JMEWS JCTD will demonstrate an updated multi-effect warhead system aboard the Tomahawk Land Attack Missile (TLAM). This warhead technology will provide a leap-ahead capability against a widely varied target set, which includes hard and soft targets.	6.000	6.000	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
In concert with this warhead, a Third-Party In-Flight Targeting (3PT) system will be demonstrated that will allow dynamic targeting and retasking of the missile as intelligence is updated. Using these technologies, Combatant Commanders will have the reliable option of neutralizing heavily defended and dynamic targets without the incursion of manned platforms. Hardware and software changes to the TLAM Program of Record (PMA-280) will be incorporated via Engineering Change Proposals once demonstrated. Deliverables will also include documented Concept(s) of Operation, Tactics, Techniques, and Procedures. Production of the TLAM will be shifted to replace the current warhead with the JMEWS warhead, and to add the datalink, radio equipment, and interfaces necessary for 3PT. JMEWS will increase the number of targets held at risk, reduce cost; increase flexibility in access denied environments and provide a long range, survivable, high-lethality weapon. The COCOM sponsor is US Central Command and the Lead Service is the US Navy. ***FY 2010 Accomplishments:*** Completed design and delivery of initial warheads. Completed initial arena testing for blast and fragmentation characterization. ***FY 2011 Plans:*** Deliver remaining warheads for completion of arena, insensitive munitions and sled testing against representative targets. Complete Joint Military Utility Assessment and end the JCTD. Transition to PMA-280 in FY 2012.			
Title: Tactical Edge Data Solutions (TEDS) ***Description:*** The Tactical Edge Data Solutions JCTD was validated by the Joint Requirements Oversight Council in FY 2010. The stated outcome of the JCTD is the implementation of C2 Core extensions for tactical information at the Battalion level so that Web-services data sharing frameworks based on Universal Core (UCore) can enable data sharing among disparate systems. The JCTD will focus on exchanging data from Army and Marine Corps C2 Authoritative Data Sources (ADS) for the Command and Control (C2) and Battlespace Awareness domains. The efficiencies to be gained will be reduction of redundant software being developed across multiple programs and the ability to seamlessly exchange data within Military Services as well as NATO and coalition partners who adopt UCore. UCore is the U.S. Government standard for interagency data exchange. The lead CoCom is U.S. JFCOM. The Marine Corps is providing the technical lead and the Army is providing the transition manager. Transition of the C2 Core extensions and Web services for translation and semantic mediation is planned for programs of record in the Army, Marine Corps and DISA. The output of the JCTD will enable moving C2 systems to migrate to DoD's goal of implementing a Service Oriented Architecture (SOA) environment. The final demonstration date will be in midyear FY 2012 and the JCTD will complete in September 2012 with transition expected in FY 2013 of data pilot services. ***FY 2010 Accomplishments:***	1.500	1.800	1.800

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Developed Implementation Plan and Management Plan. Defined architecture products, C2 Core extensions, developed web services for mediation of data (translation and semantic). Defined initial repeatable business process and objective services. Demonstrated net enabled tactical edge data exchange in Pilot 1 using a joint Maneuver Mission thread. ***FY 2011 Plans:*** Demonstrate net-enabled Coalition Data Sharing, expand web services and C2 core extensions to include NATO systems. ***FY 2012 Plans:*** Net-enabled SOA environment using tactical ISR systems. Post extensions to Metadata repository. Provide Web services and standards to C2 community to assist PORs in exposing and daring data. Provide repeatable process for extending C2 Core into other communities of interest.			
Title: Pacific Sail ***Description:*** Pacific Sail was an FY 2009 JCTD start that contains classified content only. The user sponsor is USPACOM and the Operational Manager is US Pacific Fleet. This project integrates US Air Force and US Navy capabilities into a new capability that addresses one of USPACOM's priority capability gaps. An initial proof-of-concept demonstration was conducted in late FY 2009, and final demonstration is scheduled for late FY 2011. Pacific Sail project details are classified. ***FY 2010 Accomplishments:*** Classified content. Analyzed and reported on FY 2009 data collections. Conducted systems integration of sea-based components, and executed detailed planning and approval process for operational demonstration of sea-based system. ***FY 2011 Plans:*** Complete final operational demonstrations and military utility assessment. Coordinate for follow-on transition. Complete the JCTD.	4.800	3.400	-
Title: Rapid Reaction Tunnel Detection (R2TD) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for R2TD in FY 2010. The outcome of R2TD is to demonstrate a set of detection and mapping technologies, and establish procedures to provide Joint Force Commanders with a capability to detect, characterize and interdict tunnels on the battlefield and beneath the US borders. R2TD is a multi-year project under the sponsorship of the United States Northern Command (NORTHCOM) and Joint Task Force North with support from the United States Army Corps of Engineers. R2TD will complete development and demonstration by end of CY 2011, and transition to NORTHCOM and Joint Program Manager Guardian by 2Q FY12. The lead service is Army. The primary outputs and efficiencies to be demonstrated in the JCTD Military Utility Assessment are: (1) accurately locate subsurface voids up to 100 feet in depth; (2) detect tunnel construction in real-time and report summaries every 4 hours; (3) detect movement of	3.525	4.152	2.650

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
contraband through tunnel in near-real time and report summaries every 4 hours; (4) precisely locate tunnel axis, ingress and egress points; (5) characterize physical dimensions of tunnels including depth, cross-section, and azimuth; and (6) characterize internal features of tunnels including floor, shoring, lighting, ventilation, and water presence/flow. ***FY 2010 Accomplishments:*** Integrated sensor feeds into single operational picture to produce verification of tunnel detection and movement activity. Sensors integrated and technically demonstrated include Border Tunnel Activity Detection Systems (BTADS), Electromagnetic Imaging (EMI), and Active Seismic Imaging Systems (ASI). Conducted technical demontration of tunnel characterization with a tele-operated robot. ***FY 2011 Plans:*** Fully integrated sensors and tactics, techniques and procedures (TTPs) will be operationally demonstrated at Yuma Proving Ground, problems identified and resolved, then the entire integrated detection and characterization system operationally demonstrated along the US southwest border. The final Operational Demo is scheduled for 4Q FY11. ***FY 2012 Plans:*** Completion of the JCTD is scheduled for FY 2012 to enable transition of all detection and characterization capability to JPM Guardian. The R2TD Transition manager is Joint Program Manager Guardian. The JCTD is structured to enable a potential "off-ramp" after 12 months if appropriate to deploy the integrated sensor suites and software algorithms for tunnel detection with Joint Task Force North to establish an initial residual detection capability. Follow-on characterization capability will be transitioned at this point for continued development if a transitioning organization can accept, or the JCTD will continue to mature the characterization technology for full-up integrated detection and characterization capability.			
Title: Command and Control Gap Filler (C2GF) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for C2GF as an FY-10 new start. Participants include Department of Defense, Department of Homeland Security (DHS) and other U.S. Gov't agencies. The C2GF JCTD will provide an information systems architecture that can share all-source air surveillance data between government departments. The C2GF solution will also provide data fusion services to users or enable users to operate their existing fusion processes if desired. C2GF will demonstrate for Joint, Interagency, intergovernmental and Multinational (JIIM) partners a capability that enables efficient, secure, timely and trusted exchange of information resulting in enhanced aerospace security by shared situational awareness, persistent Wide Area Surveillance, actionable intelligence and information, and event Surveillance and Reporting. Additionally, the C2GF JCTD will also refine the concept of operations and employment and techniques, tactics and procedures necessary for JIIM coordination for air domain surveillance. Demonstrations are planned for FY10, 11, and 12. The COCOM user/sponsor is USNORTHCOM.	4.800	4.800	4.800

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Began architecture design, completed testbed communication network, designed preliminary multi-sensor correlator, completed data exchanged with DHS AMOC and BCS-F, completed C2GF JCTD Service Oriented Architecture. ***FY 2011 Plans:*** Provide SIGINT and additional data to correlators. Complete advanced classified sensor integration, demonstrations and utility assessments. Conduct operational demonstration and end the JCTD. ***FY 2012 Plans:*** Complete transition activities for the C2GF JCTD. This program will continue to demonstrate for Joint, Interagency, intergovernmental and Multinational (JIIM) partners a capability that enables efficient, secure, timely and trusted exchange of information resulting in enhanced aerospace security by shared situational awareness, persistent Wide Area Surveillance, actionable intelligence and information, and event Surveillance and Reporting.			
Title: Joint Unmanned Air Systems (UAS) Precision Targeting (JUPT) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for small UAS systems in FY 2010. The objective of this effort is to rapidly provide precision coordinates from UAS generated imagery for use with coordinate seeking weapons. The Joint Commander must be able to rapidly transition from observing to striking high value targets with coordinate seeking weapons in all terrain, while minimizing collateral damage. Current UASs and targeting pods are unable to generate precision coordinates (category 1) under most conditions. The ability to rapidly strike targets identified by UAS assets is delayed because UAS derived coordinates lack precision required for coordinate seeking weapons. Deliverables include hardware, software, and documentation and a finalized CONOPS, TTPs, training package, and DOTMLPF change recommendations. The Combatant Command/User Sponsor is the U.S. Special Operations Command (SOCOM) and the Lead Service/Agency is also SOCOM. ***FY 2010 Accomplishments:*** Approved Implementation Directive (ID). Conducted repetitive evaluations of CONOPs / TTPs, threats and environment, and scenarios / vignettes. Began system integration. ***FY 2011 Plans:*** Approve Management Transition Plan (MTP). Complete system integration and conduct two operational demonstrations. Conduct Joint Operation Utility Assessment (JOUA). Spiral out capabilities as approved by National Geospatial Agency. ***FY 2012 Plans:***	0.500	3.600	0.600

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Execute transition activities to provide deliverables to USA (PM-BC PM-UAS). The Transition Manager is USA PM-UAS and SOCOM.			
Title: Fixed Wing Advanced Precision Kill Weapon System (FW-APKWS) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for FW- APKWS JCTD in FY 2010. The objective of the FW APKWS JCTD is to provide the legacy AV-8B and A-10 aircraft with a precision air-to-ground low collateral damage weapon for use in irregular warfare operating theaters and beyond. The FW- APKWS JCTD provides a guided rocket that will help fill the gap left by a diminishing supply of laser Maverick (LMAV) missiles which are out of production. In addition, these legacy platforms are not included as threshold platforms in the Joint Air-to-Ground Missile (JAGM) Program of Record (POR). The FW-APKWS JCTD is considered very low risk as it leverages the existing APKWS POR developing laser guided rockets for the AH-1W rotocraft. As such it is anticipating a rapid transition to the APKWS POR upon completion of the Military Utility Assessment (MUA). Deliverables will include documented Concept(s) of Operation, Tactics, Techniques, and Procedures, and the Technical Data Package necessary to offer a fixed-wing variant in the APKWS POR. In addition, 50 combat-ready residuals will be delivered (25 USN, 25 USAF). The Combatant Command/User Sponsor is the U.S. Central Operations Command (CENTCOM) and the Lead Service/Agency is USN (PMA-242). ***FY 2010 Accomplishments:*** FY 2010 Accomplishments: Approved Implementation Directive (ID). Conducted Initial Design Reviews. Procured kits to support Instrumented Measurement Vehicles (IMV) test, Began IMV tests. Finalized Air Force launcher version. ***FY 2011 Plans:*** FY 2011 Planned Output: Approve Management Transition Plan (MTP). Complete IMV tests. Conduct technical demonstrations (USN and USAF flight tests). Begin operational demonstrations. ***FY 2012 Plans:*** FY 2012 Planned Output: Finalize Technical Data Package, Complete Military Utility Assessment (MUA) and Operational Assessment (OA), Modify Operation Requirements Document (ORD) of APKWS to include fixed-wing production requirements. Deliver combat-ready residuals. The Transition Manager is USN PMA-242.	3.500	4.800	2.400
Title: Sea Tracker (ST) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for ST in FY 2010. The outcome of ST is a CLASSIFIED capability. The ST JCTD is sponsored by USSOCOM in cooperation with the Navy. The objective of the ST JCTD is to develop and transition capabilities to tag, track, and locate surface vessels of interest. Details are classified. ***FY 2010 Accomplishments:***	2.000	1.200	0.600

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Capability outputs are CLASSIFIED. ***FY 2011 Plans:*** Capability outputs are CLASSIFIED. ***FY 2012 Plans:*** Capability outputs are CLASSIFIED.			
Title: Operational 3- Dimension (Op3D) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for Op3D in FY 2010. The Op3D JCTD is a joint interagency-sponsored program sponsored by USSOCOM. The objective of the Op3D JCTD is to develop and transition capabilities to quickly discover, manage, generate, exploit, disseminate and accurately update 3D GEOINT data from multiple collection systems to the warfighter. This controlled process will enhance effective transition to multiple GEOINT and 3D database production facilities to support military operations. The JCTD will consist of three overlapping development and demonstration spirals. Residuals from the effort will include an enhanced 3D data processing pipeline, warfighter/analyst exploitation tools, TTPs, CONOPs, user guides and training packages. USSOCOM acts as Lead Service and is responsible for requirements validation and transition management for the SOF community. The National Geospatial-Intelligence Agency (NGA) will develop and transition successful Op3D technologies into programs of record. The transition strategy for the Op3D JCTD is to spiral off capabilities throughout the JCTD into Agency and Service Production Centers. ***FY 2010 Accomplishments:*** Developed and Beta tested imagery processing software to facilitate rapid manual/semi-automatic 3D product development and dissemination. Incorporated new capabilities into theater operations and CONUS production center use. ***FY 2011 Plans:*** Improve Beta versions based on feedback from production centers and warfighters to achieve more rapid/automated imagery processing and product development for time sensitive targeting and broad based user availability. Incorporate new capabilities into theater operations and/or CONUS production center use. ***FY 2012 Plans:*** Execute, evaluate, and transition Spiral 3 tasks. Develop CONOPs, SOPs, TTPs, user guides, and training packages for successful Spiral 3 processes.	3.400	3.702	1.320
Title: Pre-Positioned Expeditionary Assistance Kit (PEAK) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for PEAK in FY 2010. The outcome of PEAK is demonstrate and transition of an array of capabilities that can be pre-positioned to help provide sustainable, essential	2.850	3.420	0.438

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
services of value to partner nations through military-to-military operations. PEAK is a three-year project under sponsorship of USSOUTHCOM, with completion of development and demonstration by end of CY 2012 and transition to US Government Agencies related to USSOUTHCOM and other Regional Combatant Commands and partner nations by FY 2012. The lead service is to be determined. The primary outputs and efficiencies to be demonstrated in the JCTD Military Utility Assessment are: (1) enhance partner nation capabilities to carry out key missions through proactive military-to-military engagement; (2) improve partner nations' ability to provide critical services for targeted purposes during the first days of a natural or man-made crisis through a structured planning process; (3) collaboratively enhance regional stability; (4) assess and deliver up to four types of emergency assistance kits focused on water purification, power generation, communications and information sharing as the key enablers of distributed essential services; (5) provide a process for social networking and trust-building that can enhance partnership relationships in many areas, and contingencies; and (6) Provide a searchable knowledge base of cost-effective infrastructures that can be used in HA/DR, BPC and other missions. ***FY 2010 Accomplishments:*** Developed four components for expeditionary assistance kits focused on water purification, power generation, communications and information sharing as the key enablers of distributed essential services. Conducted technical testing and demonstration May – July 2010 and delivered prototype water purification with associated hybrid power capability to SOUTHCOM, AFRICOM, and PACOM for operational user evaluation in August 2010. Conducted initial technical testing of communications and information sharing components in September 2010. Spiral Output – the Water Purification with hybrid energy source prototype kit type left behind for continued use and evaluation by operational users. ***FY 2011 Plans:*** Complete integration of components for expeditionary assistance kits focused on water purification, power generation, communications and information sharing as the key enablers of distributed essential services. Conduct Limited Operational Utility Assessment (LOUA) in February 2011 and successfully demonstrate mature water purification and hybrid power components and prototype communications and information sharing components. Final operational utility demonstration of the Pre-positioned expeditionary assistance kit is scheduled for September 2011 building on the scenario and technical success of the February LOUA. Demonstrate PEAK in collaboration with nations from the USSOUTHCOM AOR. Spiral Output –PEAK kits with mature water purification, power generation, communications and information sharing components left behind for continuing use and evaluation by operational users. ***FY 2012 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Begin transition to US Government Agencies related to USSOUTHCOM and other Regional Combatant Commands and to partner nations both for purchase and local production. Develop integration and employment CONOP to integrate PEAK capability with other partners. Business Case Analysis (BCA) completed.			
Title: Integrated SATCOM-GIG Operations and Management (ISOM)	3.126	3.149	3.148
Description: The Joint Requirements Oversight Council (JROC) validated the need for ISOM in FY 2010. The ISOM JCTD outcome is to demonstrate real-time Internet Protocol (IP) satellite communications (SATCOM) situational awareness (SA) and a scalable and policy-based management system that enables dynamic allocation and provisioning of SATCOM resources. The JCTD will streamline existing SATCOM resource management tools which will greatly improve the ability to make the most of underutilized SATCOM resources or to resolve complex warfighter communications outages. The lead agency is DISA, which is serving as both the technical and transition manager. The primary outputs and efficiencies to be demonstrated are: (1) integrated, real-time situational awareness of SATCOM resources that provides a single, over-arching view of current SATCOM allocations and the load on these links; and (2) an automated ability to act on this SA information by dynamically re-allocating or re-provisioning the SATCOM resources given to IP SATCOM networks. ISOM JCTD plans for a final demonstration and assessment in the third quarter of FY 2012. ISOM is a multi-year JCTD sponsored by USSTRATCOM. ***FY 2010 Accomplishments:*** Developed Implementation Directive and Management and Transition Plan. Began development of Concepts of Operations (CONOPs), Tactics, Techniques, and Procedures (TTPs) and Training documents. Conducted initial technical and operational demonstration. Completed Spiral 1 - the development and implementation of Web Services and the integration of a data exchange model for data correlations – providing SATCOM Configuration, Network Operations applications and Network Monitoring software. Demonstrated an integrated, real-time SA of IP modem hub and terminal information, within the ISOM lab testbed architecture. ***FY 2011 Plans:*** Complete CONOPS, TTPs, and Training documents. Conduct second technical and operational demonstration. Complete Spiral 2 – the integration of ISOM SA with resource allocation module, data collectors, web services and policy-based management system. Complete Operational and System Architecture. Develop a scalable policy-based network management system that is capable of acting on the SA information by dynamically re-allocating or re-provisioning IP SATCOM subnets. Deploy ISOM Data Collectors at DoD Gateways (Northwest, Camp Roberts). Transition manager is DISA. ***FY 2012 Plans:*** Will conduct operational utility assessment in operational network environment. Demonstrate a scalable and policy-based management system that enables dynamic allocation and provisioning of SATCOM resources in an end-to-end over the air			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
architecture. Will develop a common information exchange schema based on MTOSI standard for integration with Defense Information System Network. Will deploy ISOM Master Servers at Theater NetOps Centers (TNC) CONUS. Will implement the Shared Information and Data Model (SID) for SATCOM systems by applying the SOA-compliant TMF NGOSS framework. Will complete CONOPS, TTPs, and Training documents. Will prepare for initial deployment. Will transition to configuration management for sustainment. Complete the JCTD.			
Title: Medium Altitude Global ISR and Communication (MAGIC) ***Description:*** Additional, persistent Intelligence, Surveillance and Reconnaissance capability is critically needed across the Combatant Commands. Unmanned air systems provide the bulk of our persistent ISR capability. New generation UAS capabilities are needed for affordability and increased flexibility. The next leap in capability is envisioned to be a medium altitude long endurance UAS capability. The outcome of this effort is demonstration of technologies enabling 120 hour sortie endurance with nominal 1000 pounds payload (maximum of 2600 lbs) at 15,000 feet with modular design allowing for integration of a myriad of payloads including EO/IR, SIGINT, Ground Moving Target Indication, wide area surveillance, communications relay, and strike packages. The demonstration of this 5-day capability will validate decreased manning levels necessary to operate autonomous systems thereby reducing life-cycle costs. Additionally, the integration of advanced avionics, commercially available propulsion, and standards based (open-architecture) interfaces will allow the Department an affordable, flexible solution to the CoCom flexible mission demands. This project will demonstrate a suite of technologies enabling 5-day endurance and reliability. Subsequent efforts will evaluate payload flexibility and modularity. The lead service/agency is the Air Force. The plans are for subsystem demonstrations and assessments in 2011. This project is sponsored by USCENTCOM. Planned Transition Strategy: 1) Develop and validate manning for long-endurance, autonomous ISR platforms. 2) Capability to provide flexibility of configuration with open-architecture design. 3) Provide core technologies to USAF (303rd AESW) for further development of a deployable long-endurance UAS. ***FY 2010 Accomplishments:*** Developed Implementation Directive and Management Plan with Transition Strategy. Integrated avionics onto surrogate test platform. Fabricated aircraft using advanced materials for strength and low weight, contributing to long endurance. Demonstrated long duration engine operations in testbed. ***FY 2011 Plans:*** Complete initial phase of the JCTD.	5.000	-	-
Title: National Technical Nuclear Forensics ***Description:*** The Joint Requirements Oversight Council (JROC) validated the need for this capability in FY 2010 and it fulfilled Congressional notification requirements in June 2010 . This project will strengthen strategic nuclear deterrence by enhancing	0.500	7.440	4.440

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
nuclear forensics capabilities supporting attribution after release of nuclear materials. Classified details of the problem can be provided upon request. The outcome and efficiencies will be to integrate advanced air and ground debris sample collection technologies in both manned and unmanned platforms, and develop and assess a joint interagency concept of operations for advanced air and ground sample collection with global applicability. The project will also demonstrate enhanced integrated yield estimation methods for nuclear events. The techniques to be employed will increase capabilities to determine initial yields and collect nuclear debris, while enhancing safety for federal and local incident responders. Details of collection capabilities and concepts of operation are classified and can be provided upon request. The lead agency is the Defense Threat Reduction Agency (DTRA) and lead service is the Air Force. The project plans for a final demonstration and assessment in 2012. The CoCom sponsor is USSTRATCOM. Planned Transition Strategy: 1) Joint Program Executive Officer-Chemical Biological Defense (JPEO-CBD) and Air Force Material Command (AFMC) will establish new Programs of Record (PORs) to support the prompt diagnostics, air sampling and ground sampling elements of the National Technical Nuclear Forensics mission; 2)Yield estimation software, sample collection technologies, incident mapping capability remain for limited operational use (LOU), and coordinated within identified PORs; 3) Training packages, concepts of operation, tactics/techniques/procedures also coordinated with appropriate combat development organizations. ***FY 2010 Accomplishments:*** Development of Joint/Interagency CONOPS (concept of operations), TTPs (tactics, techniques and procedures) and training plans. ***FY 2011 Plans:*** Detailed capability outputs will be CLASSIFIED. Conduct technical testing, training and technical demonstration. Operationally demonstrate interim yield estimation methods for nuclear events in addition to manual and robotic ground sampling collection capabilities to collect nuclear debris. Further develop and assess CONOPS for advanced sample collection with global applicability. ***FY 2012 Plans:*** Detailed capability outputs will be CLASSIFIED. Continue development with further developed technical testing, training and technical demonstrations. Operationally demonstrate airborne debris collection capabilities. Complete JCTD with operational demonstration of all three NTNF capabilities: yield estimation, air sampling, and ground sampling. Produce operational assessment. Publish Joint/Interagency CONOPS, TTPs, an DOTMLPF Change Recommendations (DCR). Complete the JCTD.			
Title: Rapid Site Exploitation (RSE)	-	3.600	2.640
Description: This capability will employ innovative combat site collection and exploitation capabilities with a web portal to rapidly recognize, collect, analyze, share, track, and manage collected materials. Site exploitation will include biometrics, document and			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
media, and other combat forensic materials. A web portal will link key information sources maintained by multiple US government organizations. Intent is to shorten site collection times from hours to minutes and speed forensic analysis from days to hours. ***FY 2010 Accomplishments:*** Able to accomplish the capability to employ innovative combat site collection and exploitation capabilities with a web portal to rapidly recognize, collect, analyze, share, track, and manage collected materials. The sites included the biometrics document and media and other combat forensic materials. A web portal will link key information sources maintained by multiple US government organizations. Continue goal to shorten site collection times from hours to minutes and speed forensic analysis from days to hours. ***FY 2011 Plans:*** Provide integrated site exploitation kits and prototype web portal interface, interoperable with biometric, forensic, and document/ media exploitation enterprises. Conduct initial utility assessment. ***FY 2012 Plans:*** Continue efforts in FY2012 to complete integrated site exploitation kits and prototype web portal interface, interoperable with biometric, forensic, and document/media exploitation enterprises. Conduct final utility assessment.			
Title: Dark Fusion ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for this capability in FY 2010. The outcome is a CLASSIFIED capability to detect and track non-emitting maritime threats by integrating data from national collection capabilities. This effort is expected to be a three year project under the sponsorship of United States Northern Command (NORTHCOM) and CENTCOM/NAVCENT with the Navy as the lead Service via Naval Research Laboratory. Technologies involve existing automated processing capabilities developed for national systems data. The primary outputs and efficiencies to be demonstrated in the Military Utility Assessment are CLASSIFIED. ***FY 2010 Accomplishments:*** Capability outputs are CLASSIFIED. Conducted survey of potential test locations for first technical demonstration; established preliminary Concept of Operations (CONOPS), & Tactics, Techniques, Procedures (TTPs) ***FY 2011 Plans:*** Capability outputs are CLASSIFIED. Conduct technical demonstration with existing assets. ***FY 2012 Plans:***	0.500	6.000	5.000

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Capability outputs are CLASSIFIED. Extended use expected to initiate in early FY12. The transition Manager is PM National Tactical Integrated Processing Service (NTIPS) and expects to transition to the NTIPS Program of Record.			
Title: Protection and Operation of Ip-secure Network Terrain (POINT)	0.700	1.460	-
Description: The POINT objective is to demonstrate a system to meet the USPACOM's published requirement for minimum essential command and control in a contested cyber environment. Other COCOMS have similar requirements. Generally, current DoD CONOPS provide network defense at network boundaries. Once penetrated, adversaries have broad range within the network to exfiltrate sensitive data, inject malicious data and code, or deny service to authorized users. The proposed CONOPS employs virtual secure enclaves to segment the network, increasing the layers of defense to further protect key cyber terrain elements. It forces adversaries to try to penetrate multiple protection layers. In addition, the smaller sizes of protected enclaves offer greater ability to surveill and protect the key terrain, such as networked Command and Control sites. This structure allows operational assessment of both the broad network and, independently, the key cyber network terrain. The JCTD will integrate sophisticated computer network defense technologies to provide defense-in-depth by functionally segmenting networks through the deployment of virtual secure enclaves (VSE) to protect key cyber terrain. VSEs employ virtual private networks secured with layers of cryptographic systems. The enclaves, and the network in which they reside, operate with real time network surveillance, network anomalous behavior detection, and centralized router control technologies to provide the capability to adaptively manage risk to operational networks throughout an Area of Responsibility. Implementation of this technology enables network analysts at Combatant Commands (COCOMs), Joint Task Force (JTF) Global Network Operations (GNO), service Network Operations Centers or other analysis centers to filter complex information containing network protocols and packet data in real time to ensure decision making at strategic and operational levels during cyber attacks. The POINT approach aligns with the DoD Computer Network Defense Information Assurance strategy employing defense-in-depth to protect DOD information and information systems. The lead service is the Navy. The plan for final demonstration and assessment is in 2011. This project is sponsored by USPACOM. ***FY 2010 Accomplishments:*** Developed Implementation Directive and Management Plan with Transition Strategy. Assessment organization identified and developed Integrated Assessment Plan (IAP). Developed TTPs and CONOPS. Developed Training Support Packages. Conducted JFCOM Information Operations cyber war demo (technical demonstration). Conducted operational demonstration using USPACOM exercise. ***FY 2011 Plans:*** Finalize systems, training, test, and security. Conduct one technical demonstration and one operational demonstration. Conduct operational utility assessment. Transition to limited operational use.			
Title: ADDER DeerPark	1.400	4.260	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The ADDER/ Deer Park Joint Capability Technology Demonstration (JCTD) is sponsored by the United States Southern Command (USSOUTHCOM). This JCTD will demonstrate a persistent Intelligence, Surveillance and Reconnaissance (ISR) capability which is critically needed across the Combatant Commands by providing collection and geo-location of high value targets that use advanced communication devices. This effort upgrades a scalable airborne signals intelligence (SIGINT) payload for the Senior Scout platform that provides search, detect, direction find, identify, and geo-location of modern SIGINT signals. The integrated SIGINT approach delivers a sustainable capability that spirals to meet future COCOM and USAF requirements and utilizes open architecture in accordance with OSD direction. Senior Scout is an ISR suite of equipment configured in a shelter capable of installation in a C-130E/H/J aircraft. This system provides capabilities to exploit elements of interest with direct reporting to air and ground component commanders. Senior Scout is a flexible capability adaptable to Strategic and Tactical ISR support, Counter Drug, and Military Operations Other Than War. ***FY 2010 Accomplishments:*** Upgraded hardware and software incorporated with existing ADDER system. ***FY 2011 Plans:*** Complete platform integration; conduct testing and training; and develop tactics, techniques and procedures documentation. Conduct payload demonstrations in field environments.			
Title: Commercial Radar Operational Support to SOUTHCOM (CROSS) ***Description:*** The CROSS JCTD will demonstrate the ability to task, on-demand, three commercial radar constellations and receive unclassified imagery to support operations and contingency planning activities. This capability will provide SOUTHCOM the ability to fulfill un-met lower resolution imagery tasks (e.g. Haiti disaster relief, gulf oil spill, specific classified military applications) within their Area of Focus. Upon successful demonstration at SOUTHCOM, replicate a similar model at remaining COCOMs and instantiate NGA contracts to provide direct and routine tasking and support for long-term COCOM radar imagery buys. The COCOM sponsor is SOUTHCOM, the lead Service is the US Air Force (Space Innovation and Development Center). NGA is a key partner in this JCTD. ***FY 2010 Accomplishments:*** Initiated vendor(s) imagery buy and vendor(s) processor lease. Began developing CONOPs/TTPs. ***FY 2011 Plans:*** Establish exploitation tool and standalone FTP at SOUTHCOM; finalize operator training plans; complete the SAR architecture integration, conduct testing and problem resolution methodology; finalize transition plan to COCOMs and final security	-	6.000	1.050

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
accreditation. Vendor(s) imagery buy, predecessor lease, finalize CONOP/TTPs. Conduct utility assessment and complete the JCTD. ***FY 2012 Plans:*** Establish the communications lease for Center for Southeastern Tropical Advanced Remote Sensing (CSTARS). Initiate NGA contracts to provide direct and routine tasking and support for long-term COCOM radar imagery buys. Complete transition of the leave-behind capability for CROSS JCTD.Conduct utility assessment and complete the JCTD.			
Title: COCOM Direct Support, Pre-Transition, and Classified Programs ***Description:*** This effort is comprised of three programs that support the entire JCTD Program, separate from the specific JCTD projects. The three programs are (1) Unified Combatant Commander (COCOM) Direct Support; (2) JCTD Pre-Transition (new in FY 2011); and (3) Program Integration Office for interagency classified projects. Additional details follow: (1) COCOM Direct Support: The COCOMs are essential in specifying capability needs, project selection, validation, demonstration, assessment, and transition of JCTDs. However, COCOM staffs are not manned to provide the daily interactions needed to develop and execute successful JCTDs. Therefore, the JCTD Program provides direct support to COCOMs, enabling the COCOMs to select and fund on-site support, typically 1-2 full-time equivalent JCTD managers. (2) JCTD Pre-Transition: In some cases, Service or Agency partners cannot commit to transition JCTD products until demonstrations and assessments are complete at the end of the JCTD. This leads to situations in which the Service or Agency transition funding is not available for 1-2 years, due to the Service or Agency prior Program Objective Memorandum commitments. In such cases, where there is clear transition and the need to sustain the capability for a short time prior to availability of Service or Agency transition funds, the JCTD Pre-Transition fund may be used to meet that need. (3) Program Integration Office: A limited number of classified JCTDs are executed in special classification channels, typically involving partnership with other government agencies. JCTD Program funds are used to provide the special classification handling capability and to provide partial funding to the selected special projects. ***FY 2010 Accomplishments:*** COCOM direct support enabled COCOM staff participation in development, review, and execution of over 100 JCTD Projects and Enabling Technology efforts. The Program Integration Office executed five special projects, developed proposed new start efforts, and managed special security for the JCTD Program. ***FY 2011 Plans:*** COCOM direct support continues to enable COCOM staff participation in developing and executing JCTD projects, ensuring direct warfighter input and proper focus of JCTD projects. Pending funding appropriation, JCTD pre-transition funds are targeting transition for projects including medical resupply to forward units, squad-level immersive training, mapping the human terrain	16.536	26.000	24.000

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
in forward areas, and interagency disaster response information sharing. The Program Integration Office will execute three continuing projects, develop additional projects, and continue to manage special security. ***FY 2012 Plans:*** COCOM direct support continues to enable COCOM staff participation in developing and executing JCTD projects, ensuring direct warfighter input and proper focus of JCTD projects. JCTD pre-transition funds			
Title: Enabling Technologies ***Description:*** The Enabling Technologies fund is used to rapidly assess or mature emerging capabilities requested by COCOMs, prior to determining whether a JCTD project should be initiated. Emerging Technology investments are small, short efforts that may lead to JCTD proposals, depending on the COCOM assessment and determination of technical maturity. ***FY 2010 Accomplishments:*** Funding was invested in Mini PTDS technology assessment, leading to the rapidly developed Persistent Ground Surveillance System JCTD which is deployed to multiple forward operating bases in Afghanistan. FY 2010 funding enabled data collection and analysis using two-dimensional transmit and receive array designs in the Next Generation Over the Horizon Radar technology risk reduction. As a result, other funding (non-JCTD) was directed to a Phase 2 technology risk reduction effort. Interagency resources (including a small FY 2010 Enabling Technologies investment) developed a successful FY 2011 JCTD proposal to enable better Arctic domain awareness, with friendly nation participation. An effort has been started to assess the efficacy of a purified hydrogen peroxide gast technology, enabling infection control in continuously occupied spaces, such as hospitals (severe problem in theater hospitals in current conflicts). Pending successful tests in a CONUS military hospital, this capability may be deployed in FY 2011. A quick assessment of a low-cost sky-wave radar for maritime awareness was initiated. The use of commercial satellite radar imagery for vessel detection and classification is being demonstrated. A project investigated virtual secure enclaves for computer network defense, leading to two successful JCTD proposals to protect critical command and control information. These and other efforts were all conducted at request of COCOM staffs. ***FY 2011 Plans:*** FY 2011 Projects will be determined based on emergent COCOM requests and emergent technology opportunities. Selected efforts will be small, focused, and executable in less than one year. Selected efforts may lead to a JCTD proposal, or other path to fielding or acquisition. Projects that COCOMs have requested include an assessment of a capability to assist safe rotorcraft landings in brownout conditions, maturation of cyber warfare planning and assessment tools, assessment of a capability for electronic protection of airborne radars in electronic attack environments, assessment of a network capability for tagging	6.559	6.000	6.884

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
and tracking items in transit, examination of a potential geospatial information exchange capability for friendly African nations, assessment of a capability to alert to GPS jamming or tampering, and others. ***FY 2012 Plans:*** FY 2012 projects will be determined based on emergent COCOM requests and emergent technology opportunities. Selected efforts will be small, focused, and executable in less than one year, and may lead to full JCTD proposals.			
Title: Smart Power Infrastructure Demonstration for Energy Reliability and Security (SPIDERS) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification -- SPIDERS will demonstrate cyber-secure "smart" micro-grids with demand side management and integration of renewable energy and storage on military installations, in partnership with Department of Homeland Security and Department of Energy. SPIDERS will demonstrate cyber-secure industrial control systems; application of Smart Grid technologies to military installations; secure micro-grid for sustained mission assurance and emergency support; integration of distributed and variable renewable generation and storage; effective demand-side management; and redundant, distributed back-up power systems. Output and efficiency to be demonstrated: Reduce the "unacceptably high risk" of extended electric grid outages by developing the capability to "island" installations while maintaining operational surety & security. ***FY 2011 Plans:*** Test circuit level micro-grid at existing hydrogen fueling station at Hickam AFB, HI. Tie in renewable energy source, diesel generators, and energy storage. Validate in a laboratory simulation the cyber-security strategy for the utility electric energy management system. Begin preparation for the demonstrations at Ft. Carson, CO and Camp Smith, HI. ***FY 2012 Plans:*** Test larger smart micro-grid at Ft. Carson, CO. Integrate existing Ft.Carson photovoltaic with vehicle to grid energy storage and cyber security.	-	4.000	1.500
Title: High Speed Container Delivery System (HSCDS) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification – High Speed Container Delivery System (HSCDS) will integrate aerial delivery components to provide a cost effective, high speed ingress/egress, low-altitude, accurate Point of Need Delivery (POND) capability which reduces exposure to threats (aircrew, aircraft, ground receiving units) when resupplying small combat units and provides greater load density to smaller drop zones. Program Outputs and Efficiencies: HSCDS will demonstrate and rapidly field a high speed, low altitude, accurate capability for Container Delivery System (CDS) sized bundles from DoD's high speed capable cargo aircraft . ***FY 2011 Plans:***	-	2.230	1.800

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Integrate aerial delivery components and test HSCDS threshold capabilities on C-130J and C-17 aircraft. Plan for early execution of Operational Demonstration in 1QFY12. ***FY 2012 Plans:*** Execute Operational Demonstration and rapidly field capability to theater. Finalize integration of components to meet objectives, test at objective capabilities, and plan for execution of final operational demonstrations to field objective capability to theater in FY13. Execute seamless transition of HSCDS capability to FY13 program of record with US Army Product Manager Force Sustainment Systems.			
Title: Maritime Predator (MP) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification – Maritime Predator (MP) will demonstrate the ability to conduct clandestine, intrusive unmanned maritime operations in high-threat restricted water areas of interest from a safe standoff. (Details classified). Program Outputs and Efficiencies: MP will provide several platform payload combinations as a residual capability. ***FY 2011 Plans:*** Demonstrate one platform and one payload. ***FY 2012 Plans:*** Demonstrate two platforms and three payloads.	-	2.500	2.000
Title: Preferred Force Generator (PFG) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification – Preferred Force Generator (PFG) provides planners the capability to rapidly and accurately generate and refine preferred force lists to help expedite the planning process and provide the critical data needed for COA analysis, transportation feasibility and assessments for rapid force availability. Key technologies will address data access and user defined parameters for force selection. Net-centric technologies will be employed to provide the service across the enterprise to include the SOA approach to data access/sharing. Program Outputs and Efficiencies: PFG improves the Department's Adaptive Planning ability to generate and analyze Courses of Action with increased speed and accuracy. ***FY 2011 Plans:*** Develope a PFG service that interfaces with the Joint Capabilities Resource Manager (JCRM) sourcing capabilit.. Conduct Technical Demonstrations (TDs) 1 & 2, Operational Demonstration (OD) 1, and a Limited Operational User Assessment (OUA) via a joint exercise. Develop CONOPS on application of preferred forces across planning process.	-	1.250	1.250

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Enable all interface requirements with existing and future force requirements systems. Incorporate Attribute Based Access Control (ABAC) ***FY 2012 Plans:*** New PFG services that include optimizing and rapidly populating a TPFDL with preferred forces for a large contingency plan (CONPLAN). Complete Operational Demonstration 2 and Operational User Assessment 2. Transition to Joint Capabilities Resource Manager Program of Record.			
Title: Global Decision Support (GDS) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification – Global Decision Support (GDS) enables senior decision makers use newer technologies that can deliver decision-quality information toenable quicker understanding of the situation and provide increased time for course of action development, risk assessment, and decision-making. GDS technologies provide digital conferencing capabilities that augment the current analog capabilities in the national senior leader conferencing capabilities and leverage Defense Red Switch Network and secure Voice Over SIPRNET (VOSIP) technologies. GDS provides authoritative data, secure mobile devices and improved visualization tools to enable a decision focused COA development and analysis for senior leaders in support of space and air events.Program Outputs and Efficiencies: Improved collaboration capabilities supporting emergent time-critical events to provide senior leaders with rapid situational awareness to effectively respond or develop appropriate courses of actions for missile and space events. ***FY 2011 Plans:*** Conduct National Event Conference for a missile event: introduce automated conference initiation, NCES & ISPAN web services that will transition to ISPAN as a spiral increment and be integrated with the next appropriate spiral release in FY 11. ***FY 2012 Plans:*** Integrate the Global Sensor Integrated Network display with secret level secure mobile devices to support worldwide voice/data conference that will transition to ISPAN as a spiral increment and be integrated with the next appropriate spiral release in FY 12.	-	1.250	1.250
Title: Computer Adaptive Network Defense-in-Depth (CANDID) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification – CANDID will demonstrate the integration of Virtual Secure Enclaves (VSEs) inside existing tactical networks to enable network defense-in-depth and ensure Command and Control (C2) capabilities (common operating picture, chat, and email between trusted clients) despite hostile attempts to hack, disrupt, and deny computer networks. Program Outputs and Efficiencies: (1) increased security of vital C2 capabilities in a cyber contested environment; and (2) prevents infiltration from external threats, exfiltration of protected	-	6.230	3.770

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
information and C2 denial of service, and delivers cyber surveillance/situational awareness through fusion of heterogeneous sensor data. ***FY 2011 Plans:*** Demonstrate and assess prototype Virtual Secure Enclaves Siprnet Command and Control capability at US Pacific Command, US Pacific Fleet/Joint Task Force 519, and functional components. ***FY 2012 Plans:*** Demonstrate leave behind/transition ready Virtual Secure Enclaves Siprnet Command and Control capability at US Pacific Command, US Pacific Fleet/Joint Task Force 519, and functional components.			
Title: Movement Requirements Visibility – Theater (MRV-T) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification -- Movement Requirements Visibility – Theater (MRV-T) is software and associated processes that offer the Services commonality in requesting movement support among every geographic theater of operation and the Joint Force Commander's (JFC)with unparalleled visibility of all joint theater distribution movements. MRV-T will improve the JFC's ability to deliver personnel and material through the joint theater distribution process. The MRV-T enables improved decision-making by offering prioritized courses of action to meet delivery timelines. Program Outputs and Efficiencies are: (1) increased visibility of joint theater distribution requirements; improved agility and adaptability to best meet war fighter movement requirements; and enhanced visibility of theater modal capacity and movement requirements to effectively use available capacity; and (2) substantially reduces Operations and Support costs by effectively using available capacity. ***FY 2011 Plans:*** Complete Software Certification; integrate capability to receive live Integrated Data Element/Global Transportation Network data during 2Q through 4Q FY 2011. Technical demonstration of MRV-T technology is planned for 4Q FY 2011. ***FY 2012 Plans:*** Conduct operational demonstrations of Joint Movement Requirements Visibility and Management at USPACOM and USCENTCOM Deployment and Distribution Operation Centers during 2Q through 4Q FY12.	-	2.332	2.250
Title: Collaborative Coalition Collection Environment (C3E) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification – Collaborative Coalition Collection Environment (C3E) is a language independent intelligence data collection interface usable by US and Coalition forces with initial fielding to support the OPCON transformation on the Korean peninsula. C3E will reduce data collection errors by guiding the user to choose a variety of options using "conditional" or "cascading" drop-down menus, where the sequential drop-	-	2.500	2.500

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
down menus are dependent upon the selections in the previous drop-down menus. C3E will provide the capability that enables US/Korean personnel to describe their requirements in general military terms, symbols and graphics within their native language. Initially, PRISM will be a prime object for read/write integration serving as a gateway to other collection management systems. Program Outputs and Efficiencies: Reduced reliance on specialized skills, language and process that are beyond the shared experience of general military operators. Improves the ability to gather, manage, understand and adapt to thousands of collection requirements and tasks in real time. ***FY 2011 Plans:*** Capabilities will be validated by conducting a Technical Demonstration (TD) and an Operational Demonstration (OD) during Key Resolve and Ulchi Focus Guardian Exercises to demonstrate the US and ROK PRISM/PSAS Interface. It will also:Provide Mission Manager & Requirements (MM&R) II User Interface with enhanced map, Graphic data submit, query and synchronization capabilities: and obtain Authority to operate on CENTRIX–K & DoDIIS Collection Framework PSA S—CENTRIX data online with PRISM & PSAS. ***FY 2012 Plans:*** Develop read, write and data transport to other coalition systems. Conduct TD and OD during Key Resolve and Ulchi Focus Guardian Exercises. Demonstrate:SOA implementation, XMPP SOA Services for automated target analysis & LOC target analysis and deliver C3E to USFK for FY 13 transition to JDISS			
Title: SensorWeb 2 ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification - SensorWeb will provide unified access to disparate sensor interfaces, data and services across the ISR Enterprise while delivering improved C2/ Battlespace Awareness using DCGS Enterprise Component Services listed in the Systems View 4B. SensorWeb will integrate sensors, services and processing capability and assure access to Sensor Web data services in a single security domain (SIPRnet). Sensor Web will demonstrate an integrated ISR Sensor Network, based on Open Geospatial Consortium® (OGC®) Sensor Web Enablement (SWE) commercial standards, modified to work with Department of Defense and Intelligence community architectures providing assured, rapid access to SOCOM/PACOM sensor data, KeyMaker data and applications via SensorWeb on the DCGS Enterprise. SensorWeb will provide rapid Command and Control in near real-time tasking and cross-cueing of SOCOM/PACOM sensors via an integrated SensorWeb architecture. ***FY 2011 Plans:***	-	3.025	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Deploy and evaluate an initial set of sensor-oriented web services software library and XML tags for an initial set of sensor types. In FY11, operational capability will transition via DCGS-SOF/NEA into JIOC-IT/DCGS-IC and provide access across NSG and DCGS Enterprise via the DCGS Integration Backbone (DIB). ***FY 2012 Plans:*** An optional FY12 follow-on is available to expand the set of sensor types supported. Transition SensorWeb services to the JIOC-IT architecture to form the baseline of sensor data and ISR Command and Control in the Defense Intelligence and Information Enterprise.			
Title: Non-Persistent Desktop Browsing (NPDB) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification - Non-Persistent Desktop Browsing (NPDB) provides a desktop browsing environment that protects the enterprise from the adversary's exploitation of the browser by containing the adversary within the virtual environment. At the next invocation of the browser, a pristine, trusted desktop will be automatically invoked, removing the adversary presence, even if the intrusion was undetected. NPDB prevents infiltration from external threats, exfiltration of protected information, Command and Control denial of service, and delivers Cyber Surveillance/Situational Awareness through fusion of heterogeneous sensors data. ***FY 2011 Plans:*** The NPDB will transition within the Enterprise Solutions Steering Group (ESSG) acquisition process, which provides funding for initial deployment of Computer Network Defense capabilities across the DoD networks. The Defense Information Systems Agency will assume responsibility for program execution.	-	1.025	-
Title: Gorgon Stare Smart Link ***Description:*** New start – Contingent upon congressional appropriation and congressional notification. In current contingency operations, wide area persistent sensors are deployed, generating far more data than can be processed and disseminated in a timely manner. Operators need tools to assist in identifying, processing, and disseminating the key data that is often buried in very large data collections. The Gorgon Stare Smart Link project will demonstrate the capability to dynamically prioritize, process, and deliver key data with optimized quality of service (bandwidth constrained), for the Gorgon Stare sensor system. Pending favorable utility assessment, the Smart Link products will be fielded in operations in FY 2012. ***FY 2011 Plans:*** Conduct System integration and lab testing, with assessment of timeliness of timeliness of subview setup, timeliness of bandwidth reallocation, and numbers of priority subviews reported over available bandwidth. ***FY 2012 Plans:***	-	2.440	2.780

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Live fly end-to-end demonstration and assessment, including assessment of quality of service delivered versus requested quality. Transition in FY 2012, pending user evaluation.			
Title: Joint Warfighting Integrated NetOps (JWIN) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification - Joint Warfighting Integrated NetOps (JWIN) will consolidate independent service networks into a single integrated network management view that uses a JWIN gateway to translate service specific network information into a common format. This common format allows the integration of policy controls to provide a single end-to-end situational awareness view for the Joint Task Force Commander. Key benefits include enhanced situational awareness to understand the impact of network events on critical operations and end-to-end network distributed policy control and management capabilities used to execute authoritative direction over critical network resources. ***FY 2011 Plans:*** Integrate and test network management technologies and concept of operations required for effective joint NetOps. ***FY 2012 Plans:*** Develop a acquisition strategy to implement Joint Warfighting Integrated NetOps components. Provide USPACOM with a leave behind capability to support current missions.	-	2.897	2.306
Title: Autonomous Technologies for Unmanned Aerial Systems (ATUAS) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification -- Autonomous Technologies for Unmanned Aerial Systems (ATUAS) will integrate a series of technologies and demonstrate autonomous precision delivery and retrograde to and from a forward point of need in operationally relevant conditions. It will demonstrate increased mission level autonomy through onboard enhanced autonomous navigation and contingency management software for single operator/multi-vehicle control of two UAS reduceing the risks to the Warfighter and enabling improved operational readiness. Program Outputs and Efficiencies are: (1) Intelligent autonomous navigation capabilities, delivery location beacon, autonomous retrograde technology; (2) Multi-asset control capabilities, autonomous identification of optimum load delivery locations and, (3) reduce the risks to the Warfighter and enable improved operational readiness. ***FY 2011 Plans:*** Integrate, ruggedize and demonstrate a hand-held delivery location beacon during 2Q through 4Q FY 2011. The beacon system will be demonstrated, certified and made available for the USMC immediate Cargo UAS deployment in 1Q FY12. ***FY 2012 Plans:***	-	5.000	5.000

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Integrate and demonstrate autonomous delivery beyond line of sight, autonomous enroute re-programming, in-stride multiple drop locations and control of two (2) vehicles for a single ground control station 1Q through 4Q.			
Title: Countermeasure Expendable with Replaceable Block Elements for Reactive Unmanned Systems Multi-Mission Jammer (CERBERUS) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification – Countermeasure Expendable with Replaceable Block Elements for Reactive Unmanned Systems Multi-Mission Jammer (CERBERUS) will deliver a net-enabled modular expendable jamming system based on the USAF ADM-160C Miniature Air-Launched Decoy (MALD) that employs replaceable nosecone payloads to counter emerging threats in the PACOM area of regard. CERBERUS reduce soverall mission costs by providing reconfigurable & flexible mission weapons. ***FY 2011 Plans:*** Develop open architecture specifications and enhanced MALD mission planning software. Test/demo non-coherent electronic attack payload nosecone assembly ***FY 2012 Plans:*** Test/demo advanced radar jamming payload assembly, datalink electronic attack payload assembly, open architecture vehicle, net-enabled airborne electronic attack expendable CONOPS	-	2.100	3.700
Title: Arctic Collaborative Environment (ACE) ***Description:*** New Start - Contingent upon congressional appropriation and congressional notification - Arctic Collaborative Environment (ACE) is a web-based, open source military, civilian whole of government Arctic Decision Environment Support System. ACE leverages NASA, other government agencies' investments, and experience in Arctic research to integrate disparate data, models, and products focused on Arctic sea ice flow and characteristics, permafrost melt, sea surface temperatures, state, and currents from U.S. agencies and partner nations. Program Outputs and Efficiencies: ACE assesses and transitions the Arctic Decision Environment Support System with integrated data from existing remote sensing, buoy, and in-situ data. ACE builds partner capacity through collaborative sharing, enabling military/civilian long-term environmental planning, forecasting, and management, near term cooperative actions, and understanding the current state of the Arctic Northwest Passage and the Northern Sea Route. ***FY 2011 Plans:***	-	3.983	1.204

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	PROJECT P648: *Joint Capability Technology Demonstration (JCTD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Conduct technical and operational demonstrations of prototype computing regional and national node systems, remote access stations, GIS integration and image processing, graphical user interface for ACE products. Develop and demonstrate CONOPS/ TTP. ***FY 2012 Plans:*** Transition the processing and service software, system hardware, and supporting technical, training and operational documentation to the National Oceanic and Atmospheric Administration, Partner Nations, the National Ice Center, the Earth Science Office at the Marshall Space Flight Center, European and Northern Commands. ACE will provide the foundation for the Sustaining Arctic Observing Networks nd contribute to the realization of the Global Earth Observation System of Systems.			
Title: Additional FY 2011 JCTD New Starts ***Description:*** Additional FY 2011 project proposals are in preparation. Pending appropriation of funds and results of future Candidate Decision Boards tentatively scheduled for January and April 2011, additional JCTD projects may be selected, followed by Congressional Notification. Proposals being considered are in areas including automation and robotics for force protection, interagency information sharing, advanced space and terrestrial sensors, and military capabilities for humanitarian assistance/ disaster relief. ***FY 2011 Plans:*** Anticipate starting 2-3 additional projects in FY 2011. ***FY 2012 Plans:*** Continue or complete the additional FY 2011 new starts.	-	15.238	33.690
Title: FY 2012 JCTD New Starts ***Description:*** The first group of FY 2012 JCTD new starts will be identified under the revised JCTD selection process beginning with a Candidate Nomination Board in May 2011 followed by a Candidate Decision Board (CDB) in July 2011. This allows the Department to rapidly execute the JCTDs needed in FY12 to meet the Combatant Commands (CoComs) most pressing needs as soon as FY12 funds becomes available. In addition, quarterly CDBs will be held throughout the year to address emerging CoCom needs. JCTD's indentified in these quarterly CDBs will be initiated as funds are identified. ***FY 2012 Plans:*** Anticipate starting approximately 15 new start projects in FY 2012.	-	-	56.032
Accomplishments/Planned Programs Subtotals	157.664	206.917	187.707

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	**PROJECT** P648: *Joint Capability Technology Demonstration (JCTD)*

	FY 2010	FY 2011
Congressional Add: Distributed Network Switching (DNS)	1.600	-
FY 2010 Accomplishments: Evaluated the application of the technology to an existing Navy shipboard environment in a land-based laboratory to evaluate applicability, robustness, and supportability of the emergent high-speed switching technology in realistic operational environment. In the Engineer Control Systems Lab at NAVSYSPHILLY the technology was found to solve an operational issue experienced on a weekly basis by deployed ships.		
FY 2011 Plans: Pending ongoing discussion with Navy regarding DNS application. No further funding via the JCTD Program.		
Congressional Adds Subtotals	1.600	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• Line Item #96/ PE 0604648D8Z: *JCTD Transition*	10.715	0.000	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

D. Acquisition Strategy

JCTD capabilities that demonstrate operational utility transition to acquisition via one of several methods:
- The capabilities address a documented capability gap in an existing Program of Record, so that the exisiting Program can acquire, further develop, sustain, and provide the capability under existing program documentation.
- The capabilities address capability gaps that naturally fit with an existing Program of Record, but no program documentation addressing the new capabilities. In these cases, existing program documentation (such as the Capabilities Development Document or Capabilities Production Document) is revised to include the new capabilities from the JCTD, and the JCTD capabilities transition to the Program of Record.
- The capabilities address a current operational need without requiring changes. In these cases, the JCTD capabilities may transition directly to operational use, with sustainment (operations and maintenance) funding arranged through the gaining command.
- The capabilities may be widely applicable commodity products, useful to many commands. In these cases, the commodity products can be listed on General Services Administration schedule, and be available for purchase by any commands needing the capability, using procurement funds.

E. Performance Metrics

Strategic Goals Supported in FY 2012:
- Project Selection Focus
- Spiral Technologies to Fielded Capabilities
- Time to Final Demonstration

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603648D8Z: *Joint Capability Technology Demonstration (JCTD)*	**PROJECT** P648: *Joint Capability Technology Demonstration (JCTD)*

- Adequately Shared Funding and Visibility
- Independent Assessment Capability
- Successful Military Utility Assessment (MUA)

The majority of funding from this Program Element is forwarded to the Services/Defense Agencies that execute the individual JCTD projects. The Rapid Fielding Directorate (RFD) maintains and provides overall programmatic oversight for the JCTD program, to include the individual JCTD projects. The JCTD performance metrics center on how fast relevant joint and/or transformational technologies can be demonstrated and provided to the joint warfighter. These metrics are driven by the overall business process which includes six parts: (1) selection focus; (2) ability to spin-off spiral technologies; (3) time necessary to complete a final demonstration; (4) adequately resourced projects with appropriate oversight; (5) capability to complete an independent assessment of the technology; and (6) the number of successful capabilities that are actually transitioned to the warfighter.

MEASURABLE OUTCOMES: The JCTD model is capability-based, not threat-based, serving U.S. Combatant Command priorities by focusing on near-term joint needs. Stated metrics include: All JCTDs will deliver products within 12 months to enable assessment for project continuation; 50 percent of JCTDs will provide an operationally-relevant prototype within 12 months and 75 percent will complete final demonstration within 24 months of Implementation Directive signature. JCTDs will spiral products and deliverables during the demonstration. At least 75 percent of JCTD projects will transition products to Programs of Record (PoR), sustained residual operations, or availability for procurement from the GSA Schedule.

Transition Achievement: The JCTD program has been achieving actual transition rates in excess of the stated goal. The JCTD Program defines transition as a project's product or products going to new or existing PoRs and/or providing residual products sustained in direct support of operations that satisfies a specific requirement.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	27.323	30.035	23.890	-	23.890	28.900	34.221	39.672	41.006	Continuing	Continuing
P662: *Airborne Network Gateway*	5.830	-	-	-	-	-	-	-	-	Continuing	Continuing
P663: *Network Communications Analysis*	21.493	30.035	23.890	-	23.890	28.900	34.221	39.672	41.006	Continuing	Continuing

A. Mission Description and Budget Item Justification

Warfighter's today rely more and more on communications networks to support and enable actions from targeting and shooting weapons to video-conferencing. Though military basic infrastructure capabilities follow the mainstream commercial internet, for many reasons (security, mobility, robustness), commercial telecommunications especially commercial wireless (tactical edge) communications are not well-matched with the requirements of today's warfighter. These trends will continue as the military data load becomes more diverse and heavy. The National Research Council's Network Science Report (2005) and Army Mobile Ad-hoc Network (MANET) JASONS Report (January 2006) state that the type of networking projected to meet military tactical requirements are not supported by network theory, network design nor analysis tools. These tactical edge technology challenges cut across all warfare domains (space, air, ground, sea). In response to recognized technical problems today, as well as anticipated problems in the future, this research will focus on two key problems in networked technologies: the need for expanded wireless reach where no communications infrastructure exists, and the need to create ways to manage diverse wireless communications load and heterogeneous network types. Airborne Network Gateway will expand the wireless communications and networking reach for the tactical force in the form of an airborne network gateway capability. Network Communications Analysis will establish the scientific foundations for military tactical mobile networking with a specific emphasis on the integrated network management of tactical networks. This research will provide the technical basis to standardize the implementation of military network communications capabilities in the areas of airborne network gateways and network communications analysis across the military services, joint staff, OSD and defense agencies.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	28.212	30.035	35.287	-	35.287
Current President's Budget	27.323	30.035	23.890	-	23.890
Total Adjustments	-0.889	-	-11.397	-	-11.397
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.619	-			
• Other Program Adjustments	-0.270	-	-	-	-
• Defense Efficiency - Baseline Review	-	-	-9.000	-	-9.000
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-1.660	-	-1.660
• Defense Efficiency - Contractor Staff Support	-	-	-0.701	-	-0.701
• Economic Assumptions	-	-	-0.036	-	-0.036

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P662: *Airborne Network Gateway*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P662: *Airborne Network Gateway*	5.830	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

Project P662 (Airborne Network Gateway) was completed at the end of FY 2010 and there will be no future funding for this project in out years

A. Mission Description and Budget Item Justification

Airborne Tactical Relay - An airborne tactical relay capability enables Beyond Line of Sight (BLOS) range extension for tactical mobile communications. Within the current deployed forces there is no airborne network tier to support locally distributed ground and naval forces at lower tactical levels. The need to increase the capability to support tactical forces at lower levels is highlighted in the 2006 Naval Research Advisory Committee (NRAC) Distributed Operations Study. The lack of an airborne tactical relay limits BLOS tactical communications to available satellite communications. This research will develop, integrate and demonstrate airborne tactical relay technology to support locally distributed tactical forces and achieve improved near-term networked communications capability. Focus will be placed on the transition from research to accelerated fielding. Several candidate payloads and platforms will be investigated to meet the needs of the tactical military user at the lower tactical network tiers, for example, small unit relay. Upon the selection of candidates, the technologies will be integrated, matured and demonstrated to support transition. Research and development will include the development and integration of the payload to include Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location and Reporting (EPLRS), and Soldier Radio Waveform (SRW) for example; the payload to platform integration to support demonstration; and the development of a small unit Concept of Operations (CONOPS) to demonstrate operations supported by the range extension for tactical units. Demonstrations will be used to support technology maturation and verify technology transition criteria.

Gateway Interoperability - Gateway functions on the ground and in the air are becoming common across the tactical battlefield to integrate disparate networks. Gateways as a general term include relays (range extension), bridges (connect across networks), message translation (connect across data links), and guards/cross domain security (connect across security domains). This research will define, develop, integrate, demonstrate, and assess technology that provides standards to perform gateway functions from the tactical edge to the core Global Information Grid network (GIG). Many technologies and components exist to perform the variety of gateway functions discussed. These would be assessed to identify desirable aspects to be leveraged as the foundation for providing improved interoperability. Emphasis will be placed on demonstrating capabilities to support airborne tactical relays and airborne network gateways. The research will be expanded to provide the technical basis for standards and policies that can be applied across DoD, specifically in support of the GIG.

Airborne Network Gateway Open Call – A percentage of the Airborne Network Gateway funding will be dedicated to supporting new research initiatives in this technical area. Each fiscal year, a RFP will be sent out with specific technical focus area and evaluation criteria for each project. The proposals will be graded by a peer review team who score each proposal in each of predetermined criteria. Proposals are then selected based on total score.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Airborne Tactical Relay	3.465	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P662: *Airborne Network Gateway*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Current program plan calls for the development and maturation of an airborne communications relay suitable for flight on a UAV. The relay was demonstrated in an operational environment at the end of 2009 and transitioned in 2010. The first year's effort was executed by the Marine Corps (Office of Naval Research) and the second year's effort was executed by the Marine Corps (Office of Naval Research) and Army (Communications-Electronics Research, Development, and Engineering Center). Plans called for a common, joint airborne relay supporting tactical small units developed jointly by the Marine Corps and Army, to include development of the payloads and concepts of operation and transition directly to the Services. Research efforts include BLOS Tactical Communications Relay (BTCR) and Advanced Tactical Data Link (ATDL). Overall goal: Increase the understanding of airborne tactical relays. Demonstrate the network communication technology required to support small unit distributed operations. Establish the concept of operations for how these technologies will be operationally used and supported. ***FY 2010 Accomplishments:*** - Navy initiated research effort to create models for advanced tactical network scenarios. Documented enabling technologies for Advanced Tactical Data Links. NRL report published September 2010. Brought in and incorporated models of existing systems and manipulated scenarios based on proposed Navy ConOps. Established baseline and capability improvements based on proposed prototypical systems. Formed ATDL Tiger Team. Began to explore extending emulation testbed capabilities (eMANE) to include ADTL. - Continued development for follow on assessment and technology maturation. Completed demonstration of operational relay capability (Camp Roberts, CA). Completed build of software payload for Bogue Field, NC. Incorporated integration of legacy waveforms in new platforms. Converted On-The-move (OTM) tracking system command and control (C2) link to OCONUS supported frequency. Completed BTCR project and transitioned to Marine, Army and CENTCOM partners.			
Title: Gateway Interoperability ***Description:*** Initiated this project in 2009 as a joint all service effort to increase understanding of gateways, a complex area of networking within DoD. Overall Goal: Establish the technical basis for DoD policy and standards for the Global Information Grid (GiG), specifically in the areas of the tactical edge attachment and interoperability to the GiG core networks. ***FY 2010 Accomplishments:***	1.188	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603662D8Z: *Networked Communications Capability*	**PROJECT** P662: *Airborne Network Gateway*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Completed Phase I of the Joint Aerial Layer Network (JALN) Management Study that was used to provide future operations concepts, gap analysis, task analysis, task analysis, and programs and technology review. Held JALN Network Management Summit. - Conducted directional antenna radios and HNR lab & field Demonstrations (BoldQuest Nov 09 and C4ISR OTM July 10). Demonstrated HNR operating extended communications at the CABLE JCTD. NRL and Harris Corp. documented an interface to utilize an NRL developed Programmable Embeddable INFOSEC Product with the HNW radio. Defined interface spec for Type-1 extension to HNW. - Conducted research and create publications in the following areas: UHF waveforms, application coding, spectrum reuse, and antenna technology. Produced detailed reports on each technique. Transitioned intellectual property forming the basis for future airborne C2 links. - Transitioned Enhanced Performance for HNW including Net Entry at Extended Range, AFC2IC Airborne Network Management Analysis, and Advanced Waveform Support to P663 under the Tactical Networking Evolution and Expansion Project.			
Title: Airborne Network Gateway Open Call ***Description:*** A percentage of the Airborne Network Gateway funding will be dedicated to supporting new research initiatives in this technical area. Each fiscal year, a RFP will be sent out with specific technical focus area and evaluation criteria for each project. The proposals will be graded by a peer review team who score each proposal in each of predetermined criteria. Proposals are then selected based on total score. Overall goal: To add innovative research projects in the area of airborne networking to the program. ***FY 2010 Accomplishments:*** - Distributed RFP. Created Peer Review Team. Evaluated and selected FY10 Proposals. Selected the following projects (in combination with proposals from P663 money): Directional Ad-Hoc Networking Technology (DANTE-2), Dynamic Policy Management, Link Scheduling to MAX Aggregate Throughput in TDMA Networks, Channel Modeling for Software Defined Radios in Real Atmospheric Environments, and mlabCUNE: An Emulation Environment for the AFRL Joint Airborne Testbed.	1.177	-	-
Accomplishments/Planned Programs Subtotals	5.830	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P662: *Airborne Network Gateway*

E. Performance Metrics

Strategic Goals Supported: Net-Centric Warfare/Joint Interoperable Communication

Existing Baseline: Prototype relays and gateways; initial federated, laboratory test beds; prototype joint network management tools

Planned Performance Improvement / Requirement Goal: Link expansion in prototype relays and gateways; continued integration in federated test beds; demonstration of prototypes and software tools

Actual Performance Improvement: Prototype and transition able relays and gateways; usage federated test beds; demonstration of prototypes and software tools

Planned Performance Metric / Methods of Measurement : Utilization of federated test beds; demonstration of prototypes and software tools

Actual Performance Metric / Methods of Measurement : Progress on testbed development; prototype software demonstrated; prototype architectures developed

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P663: *Network Communications Analysis*	21.493	30.035	23.890	-	23.890	28.900	34.221	39.672	41.006	Continuing	Continuing

A. Mission Description and Budget Item Justification

Tactical Mobile Networking - As studies have suggested, for instance, the National Research Council's Network Science Report (2005) and Army Mobile Ad-hoc Network (MANET) JASONS Report (January 2006), the type of networking projected to meet military tactical requirements are not supported by network theory, network design and analysis tools. This research will define those technical parameters important to military tactical mobile networking environments, investigate the status of network design and analysis tools, and evaluate how modeling and simulation is conducted to support tactical mobile networking environments. The role of network experimentation with respect to network modeling will be explored. Further development and analysis will be conducted to improve the awareness of the condition of tactical mobile networking technologies. Design tools, architectures and technical approaches will be recommended to acquisition programs as a result of this research.

Network Management Tools and Analysis - Network management in the commercial world is a highly organized, synchronized activity that has excellent tools to monitor activity and repair disrupted networks as needed. These same tools are ill-matched for management in the wireless world, and specifically for military tactical mobile networking. In addition, the military tactical mobile networking environment lacks the infrastructure (connectivity) and support (helpdesk) because resources (spectrum, people, and equipment) are scarce (not in harm's way). As the complexity of networking grows and as network capabilities are introduced, improved network management is required. For military operations, assured delivery may be needed for specific information and operations. This requires management tools to be in place to ensure continued secure and robust operations, which is not achieved with commercial wireless technologies. This research will assess network management tools in place for the military tactical mobile networking environment; develop technology and tools to address shortfalls with the goal to transition technology to operational systems.

Spectrum Management Tools and Analysis - For wireless, tactical mobile networking, the management of the use of spectrum effects network operations. The demand for spectrum is increasing due to the expanded use of sensors, imagery and voice. This demand increases the pressure on the limited shared radio frequency (RF) spectrum for military tactical networking. The current DoD frequency planning and management infrastructure will have a limited ability to cope with this demand through operational planning, Coalition Joint Spectrum Management Planning Tool (CJSMPT) Joint Capability Technology Demonstration (JCTD) and the Global Electromagnetic Spectrum Information System (GEMSIS). Advanced spectrum management concepts such as sense and adapt, spectrum sharing, and dynamic reallocation are under investigation but not yet mature support operations. This research will evaluate opportunities for more efficient and effective use of the frequency spectrum within DoD. Technology advances are expected to advance the concept of cognitive radio and cognitive antenna devices to sense and adapt operations based on spectrum policy and usage, the management of multi-band and multifunction apertures, and the use of spectrum efficient waveforms for use in military environments. This research will develop the models and tools to demonstrate capabilities for operational planning and monitoring of spectrum as these technologies are introduced.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

Integrated Network Management Capability - Network management becomes more complex as more and different types of networking capability become available. Integrated network management across heterogeneous systems, especially wireless systems, requires definition, design and development. Operationally, network management assumes all functions required to share networking resources and ensure proper operation for participants. This research will define integrated network operations tools for all aspects of network resource management and to prioritize across operational spectrum management, security management, network management, and information management. This research will also develop testbeds specially to validate models and simulations used to develop and test network management tools, and conduct experimentation on approaches developed.

Networked Communications Analysis Open Call – A percentage of the Networked Communications Analysis funding will be dedicated to supporting new research initiatives in this technical area. Each fiscal year, a RFP will be sent out with specific technical focus area and evaluation criteria for each project. The proposals will be graded by a peer review team who score each proposal in each of predetermined criteria. Proposals are then selected based on total score.

Tactical Networking Evolution and Expansion – Fielded and about-to-be-fielded tactical networks can be vastly expanded and evolved from their current capabilities by developing and applying new techniques (or existing techniques developed in basic research) to the existing systems, providing modern capability to the warfighter without the large expense to the DoD of developing new systems. This research will focus on developing and applying new DoD specific techniques to create leap-ahead approaches to Anti-Jam resistance of tactical networks, larger, more fully exploited networks, and expanded capabilities for signal/data processing and data compression in radios and across the networks. This research will take advantage of new software defined radios about to be fielded by the Department, as well as focus on the existing legacy systems, using the successful approach we developed when fielding the Netted Iridium capability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Tactical Mobile Networking	4.356	5.608	5.336
Description: This project is for the development of new applications and standards that can be used on existing tactical networks to improve data retrieval and discovery by the tactical warfighter. In addition, research is being conducted into tactical communications architectures to develop models useful for optimizing and exploiting tactical networks. New applications and architectures will be tested in a joint federated experimental emulation test bed being developed within this program. Project collaboratively executed by the Navy and Air Force. Results planned for transition to programs of record as maturity of models allow. Research efforts include Wireless Computational Networking Architecture, Heterogeneous Intelligent Filtering Extensions (HIF), Cooperative Heterogeneous Comms, Inter-domain Routing, Tactical Edge Group Wise Networking, SATCOM and Tactical NetOps, Tactical Edge Protocol Evaluation and Experimentation, Channel Modeling for Software Defined Radios in Real Atmospheric Environments, and Communications for Autonomous Systems. Overall goal: Increase understanding of the condition of tactical mobile networking technologies. Improve specification of technical standards and policy for tactical mobile networking. Refine fidelity modeling and simulation to support operations analysis and the articulation of operational requirements and performance parameters. ***FY 2010 Accomplishments:***			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Used transport protocols to develop a software infrastructure that supports application development. Completed UAV flight tests with reliable data transport with a high throughput. Created two, 40+ node cloud-computing lab testbeds supporting research in wireless ad-hoc cloud computing. Explored TCP routing and AHFS using the developed spectral clustering method. Performed additional indoor and outdoor field tests. - Began development of more detailed filtering capabilities. Began test in conjunction with Army JINX effort to filter network management traffic. Created a policy management interface for HIF tool. Developed multiple HIF gateways. Integrated HIF into the Army VAN testbed. Conducted final demonstration to conclude this program. Presented a paper at MILCOM 2010. - Invented a series of protocols that proactively use heterogeneous (i.e. SatCom and line-of-sight) links cooperatively to yield network performance that exceeds the sum of the performance achievable over the individual links. Documented findings in multiple conference and journal papers in addition to a series of technical memorandum. Implemented protocols in a common simulation package to enable easy evaluation and transfer. Worked to improve network communications protocol. Conducted research using the MIT Lincoln Lab emulation facilities. Synchronized performance visualization and created a description video. - Defined study scenario and approaches using Lincoln Labs network emulation testbed. Obtained study results using Lincoln Labs emulation testbed. Extended research into other network communications capability testbeds (Navy eMANE, Army VAN testbed). - Initiated development of CORE group-oriented networking protocols. Presented technical results on group-based, self-organization algorithms at IEEE MILCOM 2009. Completed initial prototype of the XMPP Overlay (XO), supporting server-less chat, multi-echelon gatewaying and interoperability with enterprise chat systems. Demonstrated interoperability of XO during CERDEC VAN demo. Created advance metrics and analytics to study dynamic group structures. Created and transitioned emulation scenarios to be used in evaluations. Progressed technology that provides both improved group and reliable networking delivery for Disruptive Tolerant Networking (DTN) technology. Submitted three MILCOM 2010 papers. - Began to automate the computation of PE propagation angles. Determined bandwidth limitations of the model for current implementation of PE algorithm. Proposed a spatial phase shift solution to alleviate current restrictions on bandwidth. Identified potential test sites, hardware, spectrum, and MET team for field test. Developed an interface to the signal generator to produce pseudo-random noise and multi-tone signals required for channel soundings.			
FY 2011 Plans: - Continue work in reliable UAV data transport and technology transition. Develop UAV-based cloud computing architecture to provide assured computing capacity on demand at the tactical edge. Improve performance consistency of TCP connections over UAV wireless channels by exploiting channel diversity and developing performance models. - End work on HIF. - Expand suite of protocols to include the ability to handle multiple flows simultaneously and multicast traffic. Work to improve network coding protocol.			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Analyze common approaches to determine if certain configurations result in poor or undesirable performance. Use the results and use the performance as feedback to modify protocols. Release protocol results as open source software. Update scenarios ad enhance protocols. - Continue the research fundamental applied science issues in group-based structures in self-organizing networks. Research and development of extensions to XO and group-based reliable messaging will be further addressed. XO-based reliable server-less group XMPP chat will be part of coalition operations experiments (French and German militaries) at Ft. Dix in Oct 2010. Continue DTN research into group-based extensions and approaches. - Complete a study on SATCOM and Tactical NetOps control architectures and interactions, including a draft common architecture approach. Campaign plan for joint strategic and tactical concept of operations for integrated NetOps and recommendations for future work. - Complete experimental evaluation of current state of the art protocols. Provide support for flight evaluation of select tactical edge protocols and technologies. Complete research and experimentation of enhanced cutting edge protocols with autonomy enhancements and hybrid approaches. - Perform a suitable validation and analysis of the channel model. - Investigate approaches to improve simultaneous communications and suppression capabilities by investigating algorithms and technologies that jointly optimize both missions. Create architecture and emulation/simulation description.			
FY 2012 Plans: - Create wireless 'MapReduce' implementation for UAV-based airborne cloud computing to support fast decision-making at the edge of an enterprise. Prototype wireless compute clouds to support transport and processing of large-scale sensor data based on advanced compression techniques. - Share Cooperative Heterogeneous Comms information with programs of record including JTRS and WIN-T. Implement a prototype version on Lincoln Labs mobile vehicle testbed. Prepare a software package (to enable proactively exploiting the redundancy in heterogeneous networks) for release and transition to Programs of record. - Document Inter-domain Routing lessons learned and distribute to DoD operators. Publish definitions of the impact of routing policy configurations on the interoperation and performance of connection disparate networks. - Continue to work Internet standards in self-organizing mobile ad hoc networks. Publish and document experiments and related design and make available to the community. Develop reliable messaging prototype to include algorithm options for distributed long-term consistency vs. adaptive real-time delivery in mobile and disrupted network environment models. Summarize DTN findings in group-based communications. Identify transition opportunities for XO capability. - Submit a MILCOM paper on SATCOM and tactical networks project. - Conduct flight testing for tactical edge protocol project.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Develop end-to-end system simulation capability for the channel model. Generate performance curves to characterize atmospheric impact on systems of interest to the military. Document project results and publish a journal article. - Demonstrate and define the communications requirements needed to support the growth and evolution of unmanned and autonomous systems (ex. UAV, ground robotics).			
Title: Network Management Tools and Analysis	5.209	6.167	4.810
Description: This project is for the development of joint standards and tools for policy-based and measurement-based tactical network management. New standards and applications will be tested in a joint federated experimental emulation test bed being developed within this program. Project jointly executed by the Navy, Air Force and Army, with technology transition agreements being pursued with programs of record. Research efforts include Network Agent Technology for Management (NATM), Joint Integrated Network Management System Exchange (JINX), Small Form Factor Cross Domain Solution (SFF CDS), Cyber Security Metrics Trust Model, Explicit Congestion Network (ECN) Message Based Admission Control (MBAC), Tactical Resource Management and Control, Network End-to-End Monitoring (NEEMO), High Performance Information Assurance for Wireless Applications, Optimal Scheduling in Time Division Multiple Access (TDMA) Networks, and Dynamic Policy Management (DPM). Overall goal: Increased understanding of the complexity of the tactical network management. Determination of the support required for tactical network operations. Evaluation of technology to support transition and fielding to operational capability. ***FY 2010 Accomplishments:*** - Added policy-based network management enhancements to NATM. Extended NTAM framework to address network security. Developed adaptive management plane. Incorporated security policy management. Completed July 10 demonstration. - Began to test JINX in Army Virtual ad-hoc Networking (VAN) testbed and produced final whitepaper. Completed Prototype JINX framework with plug-ins (SCOM, What's Up Gold, OpenNMS, SNMPc) for joint demonstration (Feasibility demonstration for representative Army and Marine NMS text chat systems). - Began development of a government-of-the-shelf tactical SFF CDS in conjunction with the NRL. Created a remote management/situational awareness architecture. Concluded work on SSF CDS in the Networks Program. - Submitted three Cyber Security Metrics whitepapers to MILCOM 2010. Created security metrics assessment tool and computer network defense and attack models. Created additional computer network defense and attack models for testing cyber security metrics. Concluded work on the Cyber Security Metrics Trust Model in the Networks Program. - Began work on ECN MBAC Phase 2 prototype and conducted test in the Army network-in-the-loop testbed. Concluded work on ECN MBAC in the Networks Program. - Created a tactical resource management architecture description. Created design for emulating research management and conducted test in MIT-LL testbed.			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Began restructuring NEEMO architecture to better support data flow and reduce overhead. Added features to support NEEMO to include automatic correlation of flow records from multiple sources, on-way delay measurements, export of alerts and alarms to other management systems, development of control channel for remote filtering/control options, integration of NORM delivery service, and time synchronization. - Completed architecture and dynamic algorithm channel concept for information assurance for wireless applications. E-modeled tactical edge crypto device based on PEIP. Finalized COMSEC red and black interfaces needed for tactical systems. Prototyped Crypto Module and Crypto Host Board providing. Architected Crypto Module to provide higher speed cryptographic processes. Began work with Harris to architect & demo a design for integrating the PEIP-based Ethernet Host with HNR and WIN-T based HDT. - Implemented TDMA scheduler on SSC-PAC HPC Network. Compared the TDMA scheduler performance with Boeing WNW Confidence Tests. Researched current dual-space approaches to the Multicommodity Flow problem. Outlined a Dual-LP solver for the TDMA Multi-commodity Flow problem. - Began development of DPM use cases and algorithms. Demonstrated algorithm against use cases. Completed Phase 1 report and conference publication.			
FY 2011 Plans: Incorporate additional NetOps/Situational Awareness components by specifically integrating security management and IA; develop data mining techniques to offer automated network troubleshooting recommendations; continue work on topology detection; continue research into flow-based analysis; work on synchronization techniques to allow for timing differences at remote nodes; integrate IA techniques to detect unauthorized activity and research integration of multi-layer analysis. Work with appropriate Joint demonstration projects including a potential JCTD focused on NetOps. - Expand Adaptable Information Distribution (AID) work with Disruption Tolerant Distribution and enhanced Multi-Topology Routing Distribution for NATM. - Continue field testing of JINX tool and transition tool to joint environment. Create software that produces live network COP from Visio diagrams. Begin development on visualization of JINX on multi-touch table device. Create Android OS implementation of NRL server-less chat using 802.11 for JINX. - Continue performing emulating research management test in Lincoln Labs emulation testbed. Create semantic network descriptions & policy language design. Produce final report on test results. - Installation of NEEMO on Network Emulator to further research scalability issues and integrate network management into eMANE. Develop data mining techniques to offer automated network troubleshooting recommendations. Research/ implementation of network topology discovery. Continue research into flow-based analysis. Integrate IA techniques to detect unauthorized activity.			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Extend the developed architecture and Crypto Host ICD to: 1) Support separate Ethernet data ports for multiple waveforms / applications at different classification levels, needing Type 1 cryptography (using PEIP technology), 2) Allocate channel usage within the Crypto for multi-level security (MLS) and the different application needs, and 3) Support secure remote C2 to dynamically establish crypto channels, load black keys, mission task orders, control the red/black processor cards, etc. - Create prioritization and multicast for the WNW target. Write reports for throughput comparison and algorithm investigation. Complete, code, and test the Dual-LP scheme. - Begin initial network manager integration of DPM in tactical communications lab. ***FY 2012 Plans:*** Continue to incorporate additional NetOps/Situational Awareness components by specifically integrating security management and IA; implement multi-layer analysis capabilities; integration into NetOps architectures and continue transition effort to programs of record. Continue research into flow-based analysis; research methods for automated intrusion detection and resolution and continue work with appropriate Joint demonstration projects. - Continue work on Disruption Tolerant Distribution and enhanced Multi-Topology Routing Distribution for NATM. Conduct additional demonstrations and deliver software. - Mature ID&M software for JINX by incorporating server-less tactical chat interoperable with existing systems, SCOM enhanced with JINX-based Management Packs, and network visualization tools. Create Network scan software to capture existing network organization. - Based on previous demonstrations of the tactical resource management and control project, provide a software package that can be used to illustrate the benefits of longer time-scale more-granular network management function that coordinates and brokers resources across a number of disparate network management systems that are organic to tactical communications systems. - Focus on transition of NEEMO. Continue to expand capability to interact with external network management products. Support the Joint Warfighting Integrated NetOps (JWIN) Joint Concept Technology Demonstration (JCTD). - Apply crypto architecture to the Software Reprogrammable Payload (SRP). - Develop plans for a Joint Demonstration of the optimal scheduling in TDMA Networks capability. Submit MILCOM papers on the topic. - Optimize DPM algorithm. Conduct small scale lab demonstration.			
Title: Spectrum Management Tools and Analysis ***Description:*** This project is for the development of measurement-based spectrum management tools. Applications will be developed and tested in a laboratory environment. Project executed by the Army with results available to the Navy and Air Force through the Joint NETOPS Integrated Collaborative Working Group. Transition planned for the GEMSIS program in 2010-2011 as maturity allows, and to other existing tactical network programs as appropriate. Research efforts include Dynamic Spectrum	3.185	4.817	3.857

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Allocation (DSA) Spectrum Analysis Software, Cognitive Networking Radio Platform (CNRP) and Cognitive Networking Radio Algorithmic Fusion (CNRAF), SIGINT-assisted Spectrum Management, Cognitive Radio Architecture Research, Networking for Spectrum Aware Cognitive Radios, Directional Ad-hoc Networking Technology (DANTE-2), DSA Enhancements, Spectrum Analysis and Experimentation in Dynamic Operational Environments, and Integrating Comm and Electronic Attack. Overall goal: Develop the technical basis to support changes regarding the operational use of spectrum both within the military and among spectrum regulatory bodies. ***FY 2010 Accomplishments:*** - Created a software library for DSA policy generation. Generated propagation models for DSA policy software analysis. Created a DSA policy dissemination mechanism. Created software library for DSA policy generation and created electronic warfare (EW) coexistence policy. Reported on DSA Policy dissemination mechanism. - Developed spectrum sensing and GPS interfaces for the cognitive radio. Began development of a prototype cognitive radio framework for CNRP. Began testbed instrumentation. Began to create interface for CNRP test site up, operations, and data collection. Ported cognitive radio (CR) Framework to GNU Radio. - Developed modeling package to evaluate spectrum planning Created a policy and interoperability report for SIGINT spectrum management. Explored alternative concepts (distributive spectrum sensing and alternate SIGNT modalities). Presented recommendations for specific experiments to connect the SIGINT and spectrum management communities. - Began creating performance metrics definition for the cognitive radio architecture. Conducted experiment in the VAN testbed. Created testbed for multiple DSA radios and multiple DSA networks w/ RF and Data planes testing capabilities. Completed initial study of DSA vulnerability in Electronic Attacks. Setup six node GNU radio/USRP/USRP2 testbed & CR/DSA algorithm development environment. - Began to study resource allocation and optimization in cognitive radio networks. Began developing algorithms that improve node cooperation via the use of relay nodes. Studied the impact of heterogeneity in the available spectrum at different locations of the network. Submitted papers to MILCOM, INFOCOMm and IEEE. - Invented and developed a new class of low-cost, light-weight electronically steered high gain antennas (15 GHz DANTE antenna, beam steering system, and LNA (Rx) and PA(Tx) amplifiers. - Started in-depth testing of new DSA core software and classifier for DSA Enhancements project. Preliminary design completed for frequency selection algorithm. Software in place to support channel quality algorithm. Completed warm start (discovery) design and documentation – More rapid rendezvous. Improved link maintenance to sustain connectivity. Improved channel coordination. ***FY 2011 Plans:***			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Integrate next generation Spectrum Management tool set in existing operational environments (i.e. Spectrum management centers). Develop algorithms that improve node cooperation via the use of relay nodes. Study the impact of heterogeneity in the available spectrum at different locations of the network. - Create ad-hoc negotiation schema, subnet fragmentation algorithms, subnet reconstitution algorithms, and multi-hop policy requirements for DSA. - Begin creating integrated radio network test bed that enables the development, evaluation, and demonstration of technologies that enable the operation of a Cognitive Radio Network. This will be accomplished by integrating CRNP with the VAN testbed. - Design low-cost sensor for SIGINT assisted spectrum management. Present year-end report. - Conduct electromagnetic environment survey, modeling, manipulation, simulation and emulation. Extend current cognitive radio testbed for more complex testing configurations and parameters. Continue to study capabilities of Cognitive Radio (CR) for EW as well as a counter to implementation of CR. - Continue research on stable throughput of cognitive radio networks and developing capacity scaling laws for cognitive radio networks. - Perform DANTE subsystems tests. Integrate the 15 GHz DANTE subsystems into a monolithic system. - Begin tackling DSA security issues. Study RF man-made noise effects on DSA. - Demonstrate a wireless, airborne and ground based spectrum sensing network. Create software visualization tools to convey real-time sensed spectrum space. - Research reactive electronic attack (EA) radios that can search for potential threats and study the benefits of EA radios cooperation with comm. radios. Investigate cooperation techniques and research key cooperative technologies.			
FY 2012 Plans: Demonstrate the integrated next generation Spectrum Management tool set in existing operational environments (i.e. Spectrum management centers): will extend policy-based reasoning to encompass Comms-EW coexistence requirement; expand policy capabilities to incorporate cooperative collaboration with EW systems and adaptive algorithms for real time cognitive control with special optimization technique to minimize interference for DSA/EW compatibility. - Create comms/EW interaction schema, active jammer algorithms, reactive jammer algorithms, and multi-hop policy solutions for DSA. - Perform an interoperability demonstration of CRNP in the VAN testbed. - Define an interface for connecting and fusing SIGINT data as inputs to spectrum management systems. - Continue cognitive radio testbed research and produce reports and documentation on findings. - Research Multi-hop cognitive radio networks by developing methodologies that maximize resource allocation for a set of end-to-end communication sessions while considering node heterogeneity with respect to available spectrum bands and bandwidth exchange as a means of cooperation.			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Perform DANTE 15 GHz integrated hardware extension to other frequencies (antenna) and conduct field demonstrations. - Refine DSA security design to make it more comprehensive. - Refine spectrum software visualization tools. Submit data sets into the DoD Wireless Networking Library. - Build on the functional decomposition and sharing strategy developed in the previous year that recommends approaches for simultaneously operating communications and electronic attack transmitters. Demonstrate the ability to share functions across the two missions and illustrate the benefit to each mission in doing so.			
Title: Integrated Network Management Capability	7.568	7.360	6.998
Description: This project is for the development of joint integrated network management tools, and three federated experimental test beds for the development and evaluation of integrated tactical network management and spectrum management. Project executed jointly by the Navy, Army and Air Force. Plans also establish a Joint Network Operations (NETOPS) Integrated Collaborative Working Group for the establishments of standards and joint development in support of all projects in this program. Membership includes the research community from the Navy, Marine Corps, Army and Air Force as well as developers from acquisition programs such as Warfighter Information Network-Tactical (WIN-T) and Joint Tactical Radio System (JTRS). Future plans call for further joint infrastructure test bed development to include DoD PlanetLab as well as joint networking tools in support of NETOPS. The results of this research will transition to future increments of JTRS and WINT, and if successful, to the field through a joint integrated tactical NETOPS program. Research efforts include Joint Network Management Interoperability, Wireless Networking Library (WNL), Network Emulation and Experimentation, Tactical Edge Wireless Experimentation, Edge Network Visualization and Emulation (ENVE), and Tactical Edge Network Integration and Operational Environment Testbed. Overall goal: Common integrating framework to support interoperability among various aspect of developmental network operations and management to include: spectrum management, network management, security management and information management. Reduce the cost to develop, procure and support networks through the integration across networks and functions within networks. ***FY 2010 Accomplishments:*** - Completed VAN testbed demonstration (July 2010). JCR (formerly known as FBCB2) blue-force tracking production software is being evaluated using the VAN testbed to research potential future enhancements. Integrated Army VAN testbed with the Navy's eMANE by creating an eMANE to VAN adaptor. Completed L-Band Waveform development over EMANE for VAN/eMANE integration. - Published documentation of WNL. Worked to increase participation (submission and usage) of network management data library through advertising events (promotional materials and MILCOM 2010 booth).			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Prepared and disseminated briefing on network emulation experiences and capabilities. Improved network emulations ability to scale to 100s of nodes. Released open source software tools to support network emulation efforts. Created interconnected emulation capability with CERDEC and NRL and conducting joint experiments. - Conducted Mobile Networking Modeling Workshop in Feb 2010. Updated releases of the Extendible Mobile Ad-hoc Emulator (EMANE) framework. Launched NRL 200+ node eMANE facility. Modified eMANE to add HNR/SRW models for directional antenna support. Created eMANE developer training. Added high performance optimizations to eMANE. Created detection and jamming models. NRL “Max-EMANE” Testbed Facility Established. Continued EMANE, CORE & Tools Software Development. - Designed architecture and preliminary experimental evaluation paper for mlabCUNE. Developed hybrid link-emulation models for eMANE. ***FY 2011 Plans:*** Perform a joint Service lab inter-connection specifically using a “chat” capability to validate experimentation. Initiate selection and evaluation of next generation integrated network management software tools. Integrate next generation integrated network management software tools in existing operational environments (i.e. TNOCs, JTF-GNO). - Improve ease of use (through GUI enhancements, etc.) and accessibility of VAN testbed. Develop the capability for the VAN testbed to act as a cloud service on the DREN (Defense Research and Engineering Network) to allow authorized users to test software via remote connections. Perform scalability and application testing. - Continue to administer WNL (including updating software and security patches) and increase usage. - Complete emulation infrastructure expansion. - Implement models of additional DoD command and control tactical edge networking waveforms including legacy and anticipated waveform technologies in eMANE. Incorporate initial simulation-in-the-loop capabilities provided by other mobile network modeling tools and RF propagation prediction models into EMANE framework. Validate EMANE emulated network performance against known data sets collected from field experimentation. Begin advanced tactical data link modeling. Experiment to validate EMANE emulated network performance against known data sets collected from field experimentation. Conduct third DoD Mobile Network Modeling Workshop. - Complete paper of findings/results associated with protocol development for MlabCUNE. Complete final technical report. Transition findings to ENVE project. - Conduct experimental evaluation of current state of the art tactical edge protocols. ***FY 2012 Plans:*** - Develop a virtual network configuration and management toolset. Create user test network instrumentation and technical support capability. Create a testing and debugging software toolkit for distributed software applications. - Continue to recruit and manage the data sets in the WNL.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Perform upgrades to improve ability to better manage simultaneous experiments, better collect consistent data collection formats, and enhance performance visualization tools in the MIT-LL testbed. Conduct research on large-scale network emulation experiments and share network visualization and instrumentation software through open source channels. - Develop tactical data link models, radio module interfaces, and automated experiment test-control 'harness' for EMANE. - Conduct flight testing of selected tactical edge protocols and technologies.			
Title: Networked Communications Analysis Open Call ***Description:*** A percentage of the Networked Communications Analysis funding will be dedicated to supporting new research initiatives in this technical area. Each fiscal year, a RFP will be sent out with specific technical focus area and evaluation criteria for each project. The proposals will be graded by a peer review team who score each proposal in each of predetermined criteria. Proposals are then selected based on total score. Overall goal: To add innovative research projects in the area of networked communications to the program. ***FY 2010 Accomplishments:*** - Distributed RFP. Created Peer Review Team. Evaluated and selected FY10 Proposals. Announced proposal awards. Selected the following projects (in combination with proposals from P662 money): Directional Ad-Hoc Networking Technology (DANTE-2), Dynamic Policy Management, Link Scheduling to MAX Aggregate Throughput in TDMA Networks, Channel Modeling for Software Defined Radios in Real Atmospheric Environments, and mlabCUNE: An Emulation Environment for the AFRL Joint Airborne Testbed. ***FY 2011 Plans:*** - Create and distribute FY11 RFP. Conduct a Peer Review Conference where proposal candidates will present their work to the Peer Review teams. ***FY 2012 Plans:*** - No Open Call in FY12	1.175	2.071	-
Title: Tactical Networking Evolution and Expansion ***Description:*** This project is for the development of new applications and approaches that can be used on existing tactical networks to improve the physical- and networking layers for the tactical warfighter. It will explore new ways to build architectures, antennas, signal and data processing or exploit waveforms to improve Anti-Jam resistance, network throughput and scale, or network packet routing to improve these metrics, at low cost and without sacrificing interoperability. Enhanced Performance	-	4.012	2.889

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
for HNW including Net Entry at Extended Range, AFC2IC Airborne Network Management Analysis, and Advanced Waveform Support projects transferred from P662 starting in FY11. Beyond-Link16 project will begin in FY11. Overall goal: Next generation tactical networking in the fielded tactical systems, with vastly increased capabilities, at the lowest cost possible to the DoD. ***FY 2011 Plans:*** Enhanced Performance for HNW including Net Entry at Extended Range, AFC2IC Airborne Network Management Analysis, and Advanced Waveform Support projects transferred from P662 starting in FY11. Beyond-Link16 project will begin in FY11. Begin development of early prototypes for Anti-Jam improvements field testing. Identify transition opportunities. Goal is to demonstrate capabilities in FY2012. Begin planning for additional improvements to increase throughput, scale and IP-networking capability. Identify other candidate improvements. Evaluate operational impact of potential improvements. Transfer Enhanced Performance for HNW including Net Entry at Extended Range, AFC2IC Airborne Network Management Analysis, and Advanced Waveform Support projects from P662. Begin Beyond-Link16 project. - Demonstrate the range advantage of a single tone waveform. Integrate active beam and phase-locked loop steering based on signal levels. Conduct preliminary waveform performance evaluation. - Complete Phase II of the JALN Management Study. Create formal joint concept of JALN control. - Integrate individual advanced waveform approaches into a single waveform design. ***FY 2012 Plans:*** - Develop more efficient Multicast routing schemes for directional antenna mobile routing networks. Refine the cross-layer radio-to-router interface and examine advanced routing load balancing over mixed media networks. Compare long range theoretical link performance with measured results using ONR funded apertures with HNW to further extend the range/throughput performance. Complete Geodesic Cone field test report. - Support JALN Network Management Assessment of Alternatives. Support JALN DOTMLPF Change Requests. Assist with Validation of JALN Network Management Requirements. - Perform feasibility assessment by implementing advanced waveform on hardware appropriate for air applications. Create the definition of a future airborne C2 capability that can co-exist with and augment current Link-16 capabilites.			
Accomplishments/Planned Programs Subtotals	21.493	30.035	23.890

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603662D8Z: *Networked Communications Capability*	PROJECT P663: *Network Communications Analysis*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The Netted Iridium (NI) capability will be transitioned directly to production and sustainment to the DTCS-Army program by the Army for use in the CENTCOM AOR. Other program capabilities will be transitioned to acquisition programs as successful and appropriate.

E. Performance Metrics

Strategic Goals Supported: Net-Centric Warfare/Joint Interoperable Communication. Meet current needs of tactical warfighter

Existing Baseline: Prototype relays and gateways; initial federated, laboratory test beds; prototype joint network management tools

Planned Performance Improvement / Requirement Goal: Link expansion in prototype relays and gateways; Continued integration in federated test beds; demonstration of prototypes and software tools

Actual Performance Improvement: Prototype and transition able relays and gateways; Usage federated test beds; demonstration of prototypes and software tools

Planned Performance Metric / Methods of Measurement: Utilization of federated test beds; demonstration of prototypes and software tools

Actual Performance Metric / Methods of Measurement: Progress on test bed development; prototype software demonstrated; prototype architectures developed

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603663D8Z: *Data to Decisions Advanced Technology*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	4.797	6.289	9.235	-	9.235	14.140	14.182	19.135	19.163	Continuing	Continuing
P366: *Data to Decisions Advanced Technology*	4.797	6.289	9.235	-	9.235	14.140	14.182	19.135	19.163	Continuing	Continuing

Note

The Joint Data Management program has been restructured in FY 2012 to become an expanded Data-to-Decisions program that addresses additional challenges from the Quadrennial Defense Review and Combatant Commanders. This expanded program builds on the FY 2010 and FY 2011 accomplishments with increased objectives and technology developments critical to on-going operations. This Data to Decisions program focuses on information management architecture needs located at the seams between ongoing Service research efforts.

A. Mission Description and Budget Item Justification

A critical element in nearly all defense missions is the Decision Support System, which manages the accumulation of important data and provides tools to help commanders make relevant decisions. These “Data-to-Decision” systems have become increasingly more important as our operations have shifted from large-scale force-on-force engagements to asymmetric conflicts. Terrorists and insurgents are deeply buried within local populations and employ operational concepts that blend in with urban clutter. Subsequently, finding these asymmetric targets has driven an explosion in sensing capabilities and modalities. This exponential growth in sensing volume has so stressed our current technologies that the majority of data now collected is thrown away. Additionally, because the targets are diffuse and rapidly adapt to countermeasures, there has been a rapid proliferation of decision support systems. At last count, the Research & Engineering Database had over 388 references to Decision Support programs.

The goal of this program is to develop an Information Open System Architecture (IOSA) that provides a common platform for rapidly developing and integrating new Data-to-Decisions systems. This IOSA will be based on a canonical decision support architecture and support a physical infrastructure for multi-source data management as well as user-driven innovation tools for analytics. The data management infrastructure will provide easy access and management of current and emergent data sources through plug-and-play modules. Data will be contextualized, indexed, conditioned and intelligently stored with approved formats to allow rapid search and retrieval of tactically relevant data sets. The effort will integrate existing analytics tools, and develop applicable new ones where gaps exist. A library of analytic tools will be built and research into end user programming methods will support new innovation models that mimic commercially successful products. The program consists of both applied research and technology development efforts focused on solving challenge problems each year with spiral developments to a prototype system.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603663D8Z: *Data to Decisions Advanced Technology*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	4.935	6.289	10.636	-	10.636
Current President's Budget	4.797	6.289	9.235	-	9.235
Total Adjustments	-0.138	-	-1.401	-	-1.401
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.091	-			
• Other Program Adjustments	-0.047	-	-0.636	-	-0.636
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.751	-	-0.751
• Economic Assumptions	-	-	-0.014	-	-0.014

Change Summary Explanation

Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency - Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603663D8Z: *Data to Decisions Advanced Technology*	PROJECT P366: *Data to Decisions Advanced Technology*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P366: *Data to Decisions Advanced Technology*	4.797	6.289	9.235	-	9.235	14.140	14.182	19.135	19.163	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Joint Data Management (JDM) program will be restructured in FY 2012 to become an expanded Data-to-Decision program. This Data-to-Decision program builds on the FY 2010 and FY 2011 accomplishments with increased objectives and technology developments critical to on-going operations. The JDM program is described below and included two tasks as outlined in the accomplishments/planned program section:

As the Department of Defense increases the capability and capacity to generate increasing amounts of data from numerous sensors in the battlespace, the issue of handling very large data sets has become more challenging. This is in part due to Department of Defense response to a changing threat environment where there is an expansion of the types of sensors deployed, new types of information collected, and different features used to classify these new threats. From a technical perspective, sensor processing speeds have outpaced the speed and ability to transport, store and process the data created. Science and technology (S&T) investigation into new and novel ways to manage and exploit this data is required to more efficiently use sensor assets and effectively use information in a timely fashion.

This advanced technology demonstration program will establish the demonstration and experimentation environment to conduct independent evaluations of research efforts that have the most potential of minimizing the impact of the increasing amount of information required within military operational decision-making. The intent is to leverage existing research investments within defense S&T and provide proper evaluations and assessments to facilitate technology transition. These objective assessments will be conducted and coordinated across the defense research base and with other parts of government to include Director, National Intelligence and Department of Homeland Security.

The new Data-to-Decisions program will build on the JDM program by focusing on the development of open-architecture technologies for decision support systems to help reduce future development time and cost of data management, analytics and user interface subsystems. The program will use a spiral development model with four-steps. Each year Operational teams will choose a series of cross-service challenge problems dominated by a specific sensing modality. Representative data for each of those problems will then be collected for testing against that problem. A Development team will design algorithms and data management architectures using high-level languages and self test on controlled data sets to address those challenge problems. Independent assessment will occur with sequestered data sets, but each development tool will also be tested against new sensors not included in the self-testing to determine fragility. A Transition team will host the developed algorithms as services in a spiraling prototype system.

The Applied Research program will concentrate on the Development portion of this collaborative effort, while the Advanced Technology Development program focuses on the infrastructure piece. This piece includes an Operational, Assessment and Transition initiative.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Novel Information Architectures	1.370	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603663D8Z: *Data to Decisions Advanced Technology*	PROJECT P366: *Data to Decisions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Both the size of the data to be transferred and the growing size of databases require novel architectural approaches to provide the adaptability and usability. Current databases, file systems and network protocols will not keep pace. Additionally, the level of automation required will necessarily impact the expectation of man/machine interaction and their performance. Research areas to be explored may include reconfigurable, scalable, and dynamic systems; re-indexing, association, and ontological representation for distributed and streaming data; many core file and operating systems, management and scheduling, and optimized algorithms; operationally relevant metrics and figures of merit for architecture performance, security, and vulnerability. Program Outputs and Efficiencies – Improved knowledge regarding system and network component performance which can be leveraged across defense S&T and development communities. ***FY 2010 Accomplishments:*** - Conducted detailed study of exisiting programmatic architectures across multiple Service missions areas - Developed process for characterizing performance of these systems, evaluating the strengths and weaknesses of the core technology and defining appropriate metrics. - Developed a testbed architecture to be used in the Data-to-Decisions program that includes hardware, software and development framework. Started building this system using existing hardware and defining the process by which performers can use the system.			
Title: Experimentation and Demonstration Program ***Description:*** Examine relevant DoD problem domains such as Wide Area Surveillance and Biometrics where recommended research solutions for handling large data can have the most impact. In order to conduct experimentation and assessments, test data sets and methodologies will be collected and developed. Assessment methods and performance metrics will be used to compare research options and solution potential. Several factors will be considered during these evaluations, to include; the basis of making a decision or taking an action; how access to this data has operational impact; make a difference, can the data feature be detected and processed (e.g. extracted) from the large data set and can the data be accessed and processed to support the decision, action or analysis. Program Outputs and Efficiencies – Data to support potential solutions for handling large amounts of data. ***FY 2010 Accomplishments:*** - Surveyed and catalogued existing data sets relevant to each Service missions. Developed a database of these data sets that contained important information like target types, ground truth, sensor types, and restrictions.	3.427	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603663D8Z: *Data to Decisions Advanced Technology*	PROJECT P366: *Data to Decisions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Gathered data sets for the FY 2011 Data-to-Decisions effort. - Conducted a study to characterize the properties and statistics of these data sets with the goal of developing a common mathematical data structure for the Data-to-Decisions effort. - Started effort to process video synthethic aperture radar data on a high bred cluster for a demonstration.			
Title: Operational Initiative ***Description:*** The Operational team is responsible for choosing a set of cross-service challenge problems to form a basis for developing and testing the processing and exploitation algorithms developed by the Development team. The team must collect and manage the relevant data sets used in both development and testing. Because this program is designed to specifically encourage non-traditional, highly innovative companies to participate, this team must be responsible for determining methods for providing unclassified data sets to the performers. ***FY 2011 Plans:*** - Each Service is responsible for choosing a relevant mission dominated by (MOVing INTelligence) MOVINT data sources, and then finding a data source for that mission. - Develop a means for gathering unclassified data to provide to the Development team. This data should be representative of the extended operating conditions the algorithms have the most difficulty solving. ***FY 2012 Plans:*** - Continue generating MOVINT data sources for the Development team. - Conduct a study to determine the particular problems and solutions needed for missions dominated by text input data. Find representative data sets to capture these problems and generate a set of significant challenge problems for the Development team.	-	1.596	2.000
Title: Assessment Initiative ***Description:*** The Assessment team is responsible for test and evaluation, as well as architectural analysis. The team will be the primary vehicle by which algorithm developers test their data on sequestered data sets. The team will provide feedback to the Developers and Operational team, and will guide future test vectors. This team will also be responsible for architectural analysis of the processing and user interface layers. To this end, the team will conduct quantitative analysis of algorithm performance requirements, and will conduct user interface experiments in human factors. ***FY 2011 Plans:*** - Assess early MOVINT modules in tracking and graph analytics and characterize performance as a function of extended operating condition, sensor and target.	-	2.193	2.194

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603663D8Z: *Data to Decisions Advanced Technology*	PROJECT P366: *Data to Decisions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Begin early experiments in user interfaces and collaboration models through red-blue experiments and human factor studies. ***FY 2012 Plans:*** - Continue assessment of MOVINT modules, provide extensive feedback to Operational Team on test results to guide FY 2012 collections. - Continue experimenting with user interfaces through red-blue exercises and human factor studies. Develop roadmap for algorithm advances in the user interface layer. - Conduct quantitative analysis to develop a processing architecture for text analytics. Work with the Operational team on specific problem sets.			
Title: Transition Initiative ***Description:*** This team is responsible for transitioning the prototype algorithms developed by the Applied Research program into a library of Data-to-Decisions modules. This team is also responsible for building the consortium infrastructure for storage, revision control, development and testing. The final Data-to-Decisions system architecture will be developed by this team using an internal testbed to conduct architectural analysis. ***FY 2011 Plans:*** - Build and implement a workspace for the Development team in the applied research program. Populate this workspace with data from the Operational Team. - Define the architecture and components for a Data-to-Decisions testbed that will be used for the remainder of this program. ***FY 2012 Plans:*** - Build multi-core testbed with approximately 100+ nodes on a 10 GB Ethernet backbone that is fully partitionable. - Begin initial experiments in scalability of algorithms and modules over large data sets. Develop roadmap for algorithm advancements in data management layer.	-	2.500	5.041
Accomplishments/Planned Programs Subtotals	4.797	6.289	9.235

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603663D8Z: *Data to Decisions Advanced Technology*	PROJECT P366: *Data to Decisions Advanced Technology*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• BA 2, PE# 0602663D8Z, P266: *Data-to-Decisions Applied Research*	0.000	2.711	9.079		9.079	14.139	14.180	19.135	19.162	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	15.967	11.416	10.762	-	10.762	13.417	13.683	13.982	14.408	Continuing	Continuing
P665: *Biometrics Science and Technology*	15.967	11.416	10.762	-	10.762	13.417	13.683	13.982	14.408	Continuing	Continuing

A. Mission Description and Budget Item Justification

Biometric technology is revolutionizing critical military operations by providing the warfighter with the ability to verify an individual's claimed identity; and, when combined with additional intelligence and/or forensic information, establish an unknown individual's identity which strips away his anonymity. These emerging technologies provide Department of Defense warfighters and commanders with an important capability which supports such missions as detainee management, base access, counterintelligence screening, border control, humanitarian assistance, and displaced persons management.

In Oct 2006, the Deputy Secretary of Defense designated the Director for Defense Research and Engineering (DDR&E) as Principal Staff Assistant (PSA) for biometrics with the responsibility to fully address and exercise control over all facets of the Department's biometrics programs, initiatives, and technologies. A central role of the Biometrics Program is to support the PSA in addressing the technology gaps that preclude our ability to quickly and accurately identify anonymous individuals who threaten our interests, in whatever domain they operate.

Expeditionary forensics is an emerging capability that provides the commander with the ability to attribute enemy activity to a specific individual. Forensics is included within the Biometrics Program as a means to support the increasing requirements to leverage forensic science on the battlefield.

The Biometrics Program develops a comprehensive science and technology (S&T) plan and implements multiple projects to advance capabilities in both biometrics and forensics. This S&T plan includes a portfolio of emerging technologies that will support the evolving capabilities required by the commanders and warfighters in ongoing and future military operations.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	10.904	11.416	11.568	-	11.568
Current President's Budget	15.967	11.416	10.762	-	10.762
Total Adjustments	5.063	-	-0.806	-	-0.806
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	5.378	-			
• SBIR/STTR Transfer	-0.299	-			
• Defense Efficiency – Report, Studies, Boards and Commissions	-	-	-0.772	-	-0.772
• Economic Assumptions	-	-	-0.034	-	-0.034
• Other internal adjustment	-0.016	-	-	-	-

Change Summary Explanation

FY 2010 funding increase. The adjustment reflects a congressionally approved reprogramming into Biometrics Science and Technology and is reflective of DoD priorities and decisions. Those resources are being directed toward improving the capability to identify, track and target enemy combatants.

FY 2012 funding reduction. Defense Efficiency – Report, Studies, Boards and Commissions. The FY 2012 account reflects a reduction due to the Department of Defense reform agenda, a reduction due to a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P665: *Biometrics Science and Technology*	15.967	11.416	10.762	-	10.762	13.417	13.683	13.982	14.408	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program will develop the technology that will improve the quality of biometric and forensic derived information provided to the operational forces for the purpose of identifying and classifying anonymous individuals. It will enable execution of a DoD and interagency coordinated science and technology plan that supports technology transition to biometric and forensic acquisition programs in FY 2012 and beyond.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Biometric Information Technology Evaluation (BITE)	0.840	0.800	-
Description: BITE serves as the focal point for collecting the available information on the deployed biometric and forensic systems, how they are currently used, and how different employment concepts alter performance. Understanding how biometrics contributed in Iraq and how operations are being conducted in Afghanistan will optimize our efforts in theater. The metrics developed under this forensics effort will allow for future assessment and course of action evaluation. The intent of this program is to produce: (1) a detailed simulation of the biometric and forensic operations as they are currently executed in Afghanistan; (2) operationally relevant metrics for the Defense Forensics Enterprise; (3) an analysis of the Iraqi biometric database looking at database size, enrolled populations, technologies, and operations; and (4) recommendations to maximize the biometric and forensic efforts in Afghanistan. ***FY 2010 Accomplishments:*** The BITE project: (1) developed initial operational metrics for the Defense Forensics Enterprise; and (2) collected data to develop the simulation environment for biometric and forensic operations in Afghanistan. ***FY 2011 Plans:*** The project will focus on three tasks to support the mission in Afghanistan: (1) identify the location and/or mission that generated the most matches to the biometrically enabled watchlist; (2) measure the biometric latency delay for the warfighter in order to guide and focus future improvements; and (3) measure the additional value provided by rolled fingerprints in support of latent matching.			
Title: Forensics Science and Technology (S&T) Workshop	0.050	-	-
Description: The objective of the Forensic S&T Workshop was to: (1) meet the Director, Defense Research and Engineering (DDR&E) goal of sponsoring semi-annual Forensic S&T symposia as set forth in the DoD Forensics S&T Workshop Report (7 Jan 09); and (2) leverage the DoD and interagency S&T and forensic communities to develop a coordinated and holistic plan			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
and strategy for DoD Forensic S&T investment. The primary payoff of the Forensics S&T Workshop includes determining the direction for investment in validation studies and usable prototypes while determining the direction of the next generation of forensic technology and equipment. ***FY 2010 Accomplishments:*** The following has been delivered: (1) white papers/quad charts for sponsorship of validated projects for FY 2010; (2) process and strategy for initial investment in FY 2011; (3) vetted requirements generation mechanism; and a (4) Workshop Summary Report.			
Title: Expansion of Biometrics Collection Efforts ***Description:*** The intent of this effort is to identify an optimal approach for DoD and the U.S. Intelligence Community (IC) to coordinate and expand the reach and breadth of the IC Identity Intelligence biometrics capability. This includes developing a strategy for engaging with foreign nations on sharing their biometric data with the U.S. Government. The primary objectives associated with this project are: (1) identify U.S. government partners and requirements for initiating sharing agreement development efforts; and (2) develop a strategy outlining how to share biometrics information already being collected through international engagement. ***FY 2010 Accomplishments:*** The project identified efforts already in place to collect biometric information from international countries and developed a prioritized list of countries with which to share biometric information. This enabled the project to develop a strategy for conducting engagement to collect biometric samples from current and potential international partners.	0.210	-	-
Title: WARP Network Optimizer ***Description:*** The Biometrics Automated Toolset (BAT) replication ability is limited by the inefficiencies of Transmission Control Protocol (TCP). TCP replacements have made strides in recent years and have solved many of the problems that limit the ability of TCP to move bytes, especially in low-bandwidth, high-latency networks. This project implements an alternative to TCP. The WARP Network Optimizer project addresses a critical warfighter capability gap identified in a Central Command Joint Urgent Operational Needs Statement. The objective of this project is to replace TCP with Circadence's WARP software, which is a commercial product that uses an optimized protocol. WARP creates a tunnel between two endpoints using their protocol. All TCP traffic on a specific port between these two endpoints will use WARP. The payoff is an optimized protocol which will give a net gain in replication. ***FY 2010 Accomplishments:***	0.890	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
This project is in the process of conducting a limited field test between two replication nodes to determine the utility to the BAT enterprise. If successful, the software will be installed in theater.			
Title: Biometrics Automated Toolset (BAT) Replicator ***Description:*** The current BAT replication component, called Discovery and Synchronization Service (DSS) was created as a prototype before the required functionality and performance were well understood, and when the data load was very small compared to the current BAT enterprise requirement. DSS is based on a legacy design that makes further maintenance costly and slow. This project developed an alternative BAT replicator and addressed a critical warfighter capability gap identified in a CENTCOM Joint Urgent Operational Needs Statement (JUONS). The objective of this project is to replace the current DSS software with a more robust solution that is easier to implement and maintain. ***FY 2010 Accomplishments:*** The Replacement BAT Replicator project: (1) defined the functional requirements of the replicator; (2) produced a limited functionality alpha build; and (3) began a full function test readiness review. The executable software installation package is the primary deliverable that was deployed to end users, which included a user guide and help material. In addition to the software itself, the engineering process produced documented requirements and design documentation.	0.390	-	-
Title: Enabling Effective Emulation and Tests for Biometric Automated Toolset (BAT) Data Distribution ***Description:*** This project built an emulation of the current Afghanistan BAT data distribution topology to conduct elaborate test scenarios. In addition, this project built the long-term BAT data distribution scheme using central BAT server and attachment servers, top-down database replication and selective attachment replication. This project addresses a critical warfighter capability gap identified in a CENTCOM JUONS. The project payoff is that test results from the resulting emulations will feed into the transition plan for the future design of BAT data distribution. ***FY 2010 Accomplishments:*** The principal investigators constructed the testbed for the BAT emulation and produced a test report based on elaborate BAT data distribution test scenarios. This project produced actionable recommendations for the improved BAT data distribution design, implementation, and operation and will continue to serve as the foundation to troubleshoot BAT data distribution problem as needed in Afghanistan and other countries as well.	0.360	-	-
Title: Tactical Biometrics System (TBS) Communications Optimization (COMMOPT) ***Description:*** This project is creating file compression software that can be installed on legacy biometric equipment. This file compression software will allow for more efficient usage of existing bandwidth in theater. This project addressed a critical warfighter capability gap identified in a CENTCOM Joint Urgent Operational Needs Statement.	1.322	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: The principal investigators demonstrated the capability for integration into legacy systems. This project reduced individual raw image file size up to 20:1 the normal size, other types of attachments up to 3:1 normal size, and compressed fingerprints up to 2:1. As a result, the required network bandwidth for synchronization activities may be more efficiently utilized by the Biometric Automated Toolset (BAT)/ Digital Synchronization Service (DSS), in turn allowing for enhanced operational performance.			
Title: Iris Identification Algorithm Evaluation for Biometric Automated Toolset (BAT) and Future Systems ***Description:*** This project evaluated the performance of iris identification algorithms to enable the selection of the algorithm with the highest expected operational performance and interoperability for BAT and future DoD systems. This project independently evaluated each algorithm in concert with the current BAT hardware to produce bench mark metrics for each algorithm's accuracy, computational efficiency, and interoperability to be used as a basis for selecting the best algorithm for BAT and other systems. ***FY 2010 Accomplishments:*** The Iris Identification Algorithm Evaluation for BAT and Future Systems: (1) built the testbed; (2) evaluated several iris matching algorithms; and (3) began compiling a test report. This project created baseline metrics for the current BAT iris identification algorithms. With the completed baseline, the principal investigators tested various other leading iris matching algorithms to identify those with the highest performance. The final output of this project developed a way forward to identify key image quality features impacting interoperability and performance.	0.045	-	-
Title: Field User Evaluation of Standoff Facial Recognition and Automated Registration ***Description:*** The Tactical Analysis of Video Imagery (TAVI) system is a real-time video analysis, face recognition, and human activity recognition system. People detected near the same time and in the same area can be connected by the software, and these connections are analyzed with social network analysis to determine the affiliations of those people monitored. The payoff is to produce a system whereby a Forward Operating Base (FOB) will be supported by two wide-area surveillance cameras mounted on portable masts to look at an overview of the area, as well as four pan/tilt/zoom (PTZ) cameras mounted on rugged tripods at the corners of each FOB. The wide-area and PTZ cameras work together to provide automated tracking, and face recognition of observed targets at distances up to 40m. In addition, two long range cameras suitable for doing face recognition at 100m chokepoints are provided. The long range cameras will be mounted on pan-tilt stages for manual camera control. ***FY 2010 Accomplishments:***	0.790	0.170	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The project demonstrated a prototype of the system at Empire Challenge. The Principal Investigator is currently waiting on the delivery of additional equipment that will support the evaluation for the remaining FOBs. The effort consisted of development and delivery of a TAVI system for five FOB units. . ***FY 2011 Plans:*** The project will conduct system testing; user manual writing; and user training.			
Title: Accelerated Nuclear DNA Equipment (ANDE) ***Description:*** The purpose of the field-deployable ANDE program is to enable automated rapid DNA profiling, while minimizing analytical complexity and user manipulations, for battlefield biometric and forensic applications. The prototypes will enable warfighters without technical training to generate and match DNA profiles directly from buccal swab reference samples in approximately one hour. A consortium of other U.S. Government sponsors (Defense Threat Reduction Agency, Federal Bureau of Investigation, National Institute of Justice, and Department of Homeland Security) has committed funding of $18.600 million for the program. Intent is to produce: (1) one DNA analysis prototype and 100 consumable cartridges for DNA processing; (2) forensic sample collection and processing methods; and (3) procedures, data analysis, communication, and information security elements for the ANDE system. ***FY 2010 Accomplishments:*** The project developed a Risk Reduction Plan; conducted first and second quarter reviews; demonstrated individual module integration; developed a manufacturing plan; and conducted the Preliminary Design Review. FY 2010 dollars will continue to produce outputs in FY 2011. ***FY 2011 Plans:*** In FY 2011, the project will conduct the Critical Design Review; conduct the System Acceptance Test; and deliver three prototypes to DoD.	5.615	0.674	-
Title: Aptamer Selection and Integration in Nanoparticle-Based Detection Systems ***Description:*** This project will discover novel biological recognition elements, specifically DNA and/or RNA oligomers known as aptamers that bind with high specificity and sensitivity to molecules of interest. Several different platforms are being investigated at the Air Force Research Laboratory in order to convert this binding event into optical and electrical signals which allow for implementation into a handheld sensor. The primary output of this program is to deliver a selection method for aptamers that can be used to detect multiple chemicals and detection assays for multiple analytes which have been examined with several platforms, as well as a prototype microfluidic field effect transistor sensor. ***FY 2010 Accomplishments:***	0.315	-	0.180

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The program studied and selected aptamers using published protocols. FY 2010 funds will continue to produce outputs in FY 2011. ***FY 2011 Plans:*** In FY 2011, the project will develop a new discovery method for aptamers and functionalize various types of nanoparticles for better assay performance. ***FY 2012 Plans:*** The project will demonstrate multi-target detection and integrate the aptamers into a modular chip platform for multiplex assays and long-term application into complex matrices.			
Title: Rapid DNA Processing Initiative ***Description:*** This initiative is examining alternative technologies to expedite the identification, collection and processing of DNA samples in an expeditionary environment. This includes the development of technology to process DNA using alternative microfluidic technologies as well as training on existing and future DNA sampling techniques. The primary output of this program is to develop an alternative rapid DNA processing capability that will allow the warfighter to produce a DNA profile in less than 60 minutes in the expeditionary environment. ***FY 2010 Accomplishments:*** This initiative delivered a low rate production prototype to be tested and evaluated by the warfighter. The initiative demonstrated a prototype that can process DNA in under 90 minutes. FY 2010 dollars will continue to produce output in FY 2011. The project is improving on existing research with the goal to process a DNA sample in less than 60 minutes. ***FY 2011 Plans:*** In FY 2011, this project will deliver a prototype for testing and evaluation purposes.	2.100	-	-
Title: Age of Latent Fingerprints for Tracking Suspects ***Description:*** This project is investigating the feasibility of using DNA or other chemicals in a latent fingerprint to determine the age of that particular print. It is known that DNA degrades at ambient conditions. This project is determining the time course for this degradation and evaluating whether it can be used to estimate when a suspect made that fingerprint. The objective of this work is to determine if DNA degradation can be correlated with exposure time to ambient conditions. ***FY 2010 Accomplishments:*** The investigators evaluated DNA and cell degradation from samples seeded on different surfaces. ***FY 2011 Plans:***	0.335	0.395	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The investigators will evaluate DNA degradation from latent fingerprints and provide a final report evaluating feasibility of this technique.			
Title: Novel Specimen Collection, Storage, and Analysis ***Description:*** This project developed a new way to collect and retain chemical and biological specimens from solid surfaces, liquid solutions or gas streams. The method uses ionic liquids as a selective and stable mobile phase. The ionic liquid itself is contained in a high surface area applicator, such as a swab or gel. The objective of this project is to develop specimen collection devices (swabs) that are selective and very stable. ***FY 2010 Accomplishments:*** The project measured the basic physical properties of four diverse ionic liquids.	0.285	-	-
Title: Rapid, Automated Sample Preparation for Biological Assays ***Description:*** This project is developing a rapid microfluidic-based system to process raw environmental and/or clinical samples and extract the DNA for downstream analysis by any platform. The technology utilizes acoustic, thermal, and electric fields to separate out contaminants such as debris or pollen, lyse open cells, and extract the DNA from the lysate. The objective is to deliver performance data of contaminate removal using acoustic chips, performance data of DNA recovery from spiked samples and environmental samples, and microfluidic chips for integration into existing assay platforms. ***FY 2010 Accomplishments:*** The project developed the acoustic filter which includes the fabrication of the acoustic device, testing of the separation of contaminates from cells, and reporting on the performance of contaminate removal. ***FY 2011 Plans:*** In FY 2011, the investigators will demonstrate on-chip lysis of target cells, demonstrate and quantify DNA recovery, and deliver microfluidic chips for integration with an existing assay platform.	0.670	-	-
Title: Automated Image Processor for Latent Prints ***Description:*** This project developed an automated document exploitation system capable of processing latent prints via optical rather than chemical imaging. In addition, the final prototype will send the biometric images (total document and fingerprint/palmprint biometrics) to a biometric database using standard transmission formats. This project output is to develop a revolutionary optical document latent print scanner that will considerably decrease the processing time of latent prints. This will be accomplished using optical, non contact fingerprint detection technologies that can be integrated with existing Federal Bureau of Investigation (FBI) certified fingerprint imaging systems.	0.890	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Initial laboratory test results indicated the quality of the resulting image will be a function of the paper on which the latent fingerprint is found and of any additional residual contents (human oil, different materials, etc.) left by the finger on the paper. For algorithm development, the Processor for Latent Prints demonstrated the ability to automatically detect in a synthetic environment multiple fingerprints placed randomly on various size and background papers including a sample with high text content.			
Title: Lanthanide Oxide Nanoparticles for Fumeless Latent Fingerprint Detection and Image Processing ***Description:*** This project used lanthanide oxide nanoparticles to specifically bind to fingerprint residue and provide for fluorescence detection under broadband ultraviolet illumination to develop latent prints without traditional fuming techniques. The objective is to create the ability to eliminate the fuming process for latent fingerprint detection, allowing for “real-time” in-field processing capability. The capability is taking the current five step fingerprint detection process down to three simple steps: apply nanoparticles (spray), image, and process. By eliminating the need for a special fuming chamber, the fingerprint detection process can be made more efficient and effective. ***FY 2010 Accomplishments:*** The project conducted testing on various surfaces to evaluate the potential for using the lanthanide oxide nanoparticles. The project conducted testing on various surfaces to evaluate the potential for operationally using the lanthanide oxide nanoparticles.	0.100	-	-
Title: Integrated Multi-Test Sensor System for Battlefield Forensics ***Description:*** This effort developed an integrated multi-dimensional sensor system that provides for real-time fast forensic analysis of unknown chemical materials. The resulting device offers superior reliability (negligible-false alarms) along with high sensitivity, detection of a wide range of analytes and built-in redundancy while meeting the low-cost, weight/size and power requirements of a hand-held forensic system. The project will integrate three key components: an optical interferometer, a planar electrochemical cell, and thin film chromatography, into a single system. The system will provide identification and quantification of compounds in real time, in the field, which currently requires processing of samples in a remote analytical laboratory. ***FY 2010 Accomplishments:*** The project developed a system design and demonstrated the optical detection capability that will be integrated into the prototype.	0.270	-	-
Title: Tactical Latent Camera ***Description:*** This project is developing a field-ready system designed to collect latent fingerprints under tactical conditions by Special Operations Forces (SOF) operators. This project will develop a tactical device to capture high quality fingerprints. The device will simplify the collection of prints by the operator, and provide higher quality captures for Latent Print Examiners (LPEs) to investigate. The process will streamline the data transfer of captured print files, and reduce the involvement of LPEs.	0.490	0.600	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: An earlier stage prototype was developed and is currently in testing. ***FY 2011 Plans:*** The project will conduct final system enhancement and will deliver ten (10) pre-production prototypes to DoD.			
Title: Computational Iris Capture Camera Prototype and Demonstration (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will improve image quality and reduce motion blur for handheld iris enrollments using a fluttering shutter technique. The flutter shutter technique has applications for both iris and facial imaging systems. ***FY 2011 Plans:*** This project will develop a near infra-red iris image capture camera incorporating the developed flutter shutter techniques.	-	0.850	-
Title: Non-Contact Biometric Hand Scanner (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will develop a non-contact, mobile hand print biometric capture system that is capable of capturing three dimensional images of all five fingers and the palm in a single presentation. ***FY 2011 Plans:*** This project will provide an operational brass board of the biometric system that can capture and process the prints on a whole hand.	-	0.850	-
Title: Improving Iris Recognition Matching of Off Angle and Dilated Non-Ideal Data (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will research an approach to improve performance in segmenting and matching iris data that is captured at angles greater than 20 degrees off-angle. ***FY 2011 Plans:*** This project will provide image processing and pattern recognition algorithms to improve the performance of iris recognition at off-angles as well as algorithm testing results.	-	0.780	-
Title: Handheld Unconstrained Iris Camera (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will address the challenges associated with warfighters capturing iris biometric data of freely moving subjects, at oblique angles, and in suboptimal lighting conditions such as bright sunlight.	-	0.850	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2011 Plans: This project will provide image processing and pattern recognition algorithms to improve the performance of iris recognition at off-angles as well as algorithm testing results.			
Title: Biometric Scientific Research Assessment (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will identify and assess biometric related academic research. The purpose of this assessment is to identify those biometric disciplines that are critical to the national security mission but have not received significant research in the academic community. ***FY 2011 Plans:*** This project will provide a catalog of existing biometric research published by academia and a final report that identifies opportunities for investment in future research.	-	0.260	-
Title: Portable Low Temperature Plasma Miniature Mass Spectrometer (LTP Mini-MS) (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will develop a hand-portable mass spectrometer device for the detection of explosives, chemical weapons agents, drugs of abuse, gunshot residues, and other toxic and hazardous chemical compounds. This significant reduction in size enables the warfighter to conduct chemical forensic analysis on site, and eliminates lengthy delays from transporting samples back to laboratories. Of note, this project was formally known as Desorption Electrospray Ionization Mass Spectrometer (DESI) but was changed due to improvements in the technical approach. ***FY 2011 Plans:*** This project will deliver four miniature mass spectrometer systems and provide documentation and performance information.	-	0.510	-
Title: Stokes Image Sensor for Non-invasive and Rapid Latent Fingerprint Detection (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will develop a portable system that can rapidly capture a latent fingerprint without affecting the print. This system will use an optical technique to image latent prints using spatially resolved polarization phase shifts of a probe laser. ***FY 2011 Plans:*** The first phase will include the development of a test bed and a proof of principle test to demonstrate the Stokes Image Sensor capabilities. ***FY 2012 Plans:***	-	0.350	0.300

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The second phase will develop and deliver a prototype of the portable Stokes Image Sensor.			
Title: Low Cost, Portable, 3D Ballistic Imaging System using Structured Light Illumination (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will develop a low cost, portable, three-dimensional ballistic imaging system that will speed the transfer and analysis of evidence while improving the comparison of ballistic samples. ***FY 2011 Plans:*** This project will provide a prototype system that leverages a structured light imaging technique to capture ballistic information.	-	0.500	-
Title: Comprehensive Organic and Inorganic Characterization of Gunshot Residue (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will develop analytical protocols that will target inorganic and organic constituents of firearm discharge residues through exploitation of proven principals of ionic/molecular chemistry. This research will allow for a field detection capability that can leverage existing technology and commercially available instrumentation, while reducing the problematic high false positive rate of current detection systems. ***FY 2011 Plans:*** This project will demonstrate the feasibility of using ion mobility spectrometry and tandem mass spectrometry to detect the inorganic constituents of gunshot residue.	-	0.480	-
Title: Forensic Analysis Spectral Imaging Tool (FASIT) (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will develop a technology to rapidly locate trace forensic evidence and areas of interest within the battlefield environment using specific wavelength bands of light. ***FY 2011 Plans:*** This project will provide two prototype systems for use in expeditionary lab environments with associated technical and training manuals.	-	0.480	-
Title: Extraction of Chemical Residue with Fingerprint Transfer and Lifts (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will research the ability to gain ultra-trace information from gathered biometrics to aid the warfighter in identifying potential evidence of trace explosives, chemical weapons, biological weapons, and drugs.	-	0.360	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2011 Plans: This project will develop an ultra-trace forensic workstation coupled to mass spectrometry for analysis of transferred chemical residue.			
Title: Single-use Sensor Strips for Reliable Field Analysis of Gunshot Residues (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will investigate the ability to immediately identify individuals that fired a weapon in a battlefield environment using electrochemical stripping voltammetry. This technique is currently used by the medical community for blood testing and will be adapted for a battlefield forensic application. ***FY 2011 Plans:*** This project will develop a hand-held prototype device, using disposable sensor strips, for gunshot residue field detection with appropriate software and documentation.	-	0.311	-
Title: Detection and Imaging of Undeveloped Latent Fingerprints (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** This project will research the appropriate technique (optical, chemical, and thermal imaging) for locating and capturing latent fingerprints on a variety of surfaces. This will enable forensics labs to more efficiently detect and image undeveloped latent fingerprints on a range of objects. ***FY 2011 Plans:*** This project will provide research and a final report on the performance of the various imaging techniques studied with appropriate recommendations for use and further development.	-	0.666	-
Title: Forensic Scene Modeling (funding contingent upon congressional appropriation and/or new start authorization) ***Description:*** Description: This project will seek to address the requirement to quickly and accurately document a scene or event for future forensic analysis. A market survey will be conducted to determine current commercial capabilities and an investment will be made to develop, demonstrate and evaluate a technical solution. ***FY 2011 Plans:*** This project will provide an assessment of available capabilities offered by the commercial sector as well as the infrastructure to evaluate potential solutions.	-	1.080	-
Title: Biometric and Forensic Technical Evaluation (funding contingent upon congressional appropriation and/or new start authorization)	-	0.450	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This effort will assess biometric and forensic prototypes that have been transitioned to DoD. The assessment will focus on evaluating software and hardware deliverables from completed projects to determine the potential for transition and fielding to the warfighter. ***FY 2011 Plans:*** This project will produce test results and a report that provides overall recommendations and a suggested path forward for the biometric and forensic technology being evaluated.			
Title: FY 2012 Expeditionary Forensic Science and Technology ***Description:*** Continue support in developing new technologies that will provide an emerging expeditionary forensic capability to the warfighter and commander within DoD. The Biometrics Program will develop the requirements and solicit proposals for FY 2012 during FY 2011 and to select projects by the end of Q4 FY 2011 ***FY 2012 Plans:*** The investment for FY 2012 will support gaps identified by commanders in the areas of reducing time on target to collect forensic data and increasing the amount of analysis that can be done in a field environment vice a laboratory environment. Projects will be selected after coordination with organizations throughout DoD and other U.S. Government Departments and Agencies to maximize collaborative investment and prevent redundant research.	-	-	3.634
Title: FY 2012 Biometric Science and Technology ***Description:*** Continue support in developing new technologies that will provide an emerging biometric capability to the warfighter and commander within DoD. The Biometrics Program will develop the requirements and solicit proposals for FY 2012 during FY 2011 and to select projects by the end of Q4 FY 2011. ***FY 2012 Plans:*** The investment for FY 2012 will support gaps identified by commanders in the areas of increasing standoff distance for collection and exploring the use of emerging modalities. Projects will be selected after coordination with organizations throughout DoD and other U.S. Government Departments and Agencies to maximize collaborative investment and prevent redundant research.	-	-	6.648
Accomplishments/Planned Programs Subtotals	15.967	11.416	10.762

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603665D8Z: *Biometrics Science and Technology*	PROJECT P665: *Biometrics Science and Technology*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Defense Biometrics Science & Technology (S&T strategy) is to annually assess biometric and forensic technology gaps in the Department's combined S&T portfolio, and sponsor projects that help close those gaps. These projects are designed to advance immature technologies and deliver a prototype. This strategy was initiated in FY 2008 concurrent with the first year of funding, and the first five projects each delivered prototypes in October 2009.

In FY 2010, nine projects were completed with prototype or final product delivery, and all nine (100%) were transitioned to the Army to provide technology infusion or inform the formal acquisition process for the Joint Personnel Identification and Biometric Enabling Capability programs of record. Additional development will be required for these prototypes prior to selection for production. Another project, sponsored jointly with DHS, is scheduled for delivery and transition by the end of 1Q FY 2011.

In addition, project performance metrics specific to each effort are identified in the project plan, and individual project success will be monitored through these metrics. The metrics include items such as target dates from project work break down schedules, production measures, production goals, production numbers and demonstration goals and dates.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603668D8Z: *Cyber Security Advanced Technology Development*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	-	10.000	10.709	-	10.709	20.496	20.553	30.435	31.576	Continuing	Continuing
P113: *Cyber Security Advanced Research*	-	10.000	10.709	-	10.709	20.496	20.553	30.435	31.576	Continuing	Continuing

A. Mission Description and Budget Item Justification

Our military forces require resilient, reliable networks to conduct effective operations. However, the number and sophistication of threats in cyberspace are rapidly growing, making it urgent and critical to improve the cyber security of Department of Defense (DoD) networks to counter those threats and assure our missions. This program will incorporate projects in both cyber security and computer network operations to develop demonstrable capabilities to harden key network components, increase the military's ability to fight and survive during cyber attacks, disrupt nation-state level attack planning and execution, measure the state of cyber security, and explore and exploit new ideas in cyber warfare.

The Cyber Security Advanced Technology Development program element is budgeted in the advanced technology development budget activity because it will focus on the maturation of successful applied research results and their development into demonstrable advanced cyber capabilities. The Cyber Security Advanced Technology Development program will build on results of matured applied research from the Cyber Security Applied Research and other programs to develop technology demonstrations for potential transition into capabilities that support the full spectrum of computer network operations.

This Defense-wide program element will address advanced persistent threats to fill DoD science and technology (S&T) gaps identified in key reports and studies conducted by DDR&E over the past year.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603668D8Z: *Cyber Security Advanced Technology Development*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	10.000	20.000	-	20.000
Current President's Budget	-	10.000	10.709	-	10.709
Total Adjustments	-	-	-9.291	-	-9.291
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense Efficiency - Baseline Review	-	-	-9.000	-	-9.000
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.276	-	-0.276
• Economic Assumptions	-	-	-0.015	-	-0.015

Change Summary Explanation

Defene Efficiency - Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603668D8Z: *Cyber Security Advanced Technology Development*	PROJECT P113: *Cyber Security Advanced Research*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P113: *Cyber Security Advanced Research*	-	10.000	10.709	-	10.709	20.496	20.553	30.435	31.576	Continuing	Continuing

A. Mission Description and Budget Item Justification

Efforts of the program will develop improved and demonstrable capabilities through the DoD S&T organizations within and across the following technical areas: Information Assurance / Computer Network Defense (IA/CND) – Develop technologies to harden DoD network components; improve understanding of cyber threat and the mitigation of the threat; and enable systems to operate through cyber attacks in degraded environments.

Computer Network Operations (CNO) – Disrupt adversary attack planning and execution; explore game-changing ideas over the full spectrum of CNO and new concepts in cyber warfare; increase collaboration between disparate research communities within CNO; and address identified gaps in DoD CNO S&T to prepare for cyber conflict against advanced persistent threats.

Cyber Security Metrics – Explore new analytical methodologies, models, and experimental data sets to establish metrics to measure a system's state of security; and apply the scientific method to establish the foundations of a scientific framework in which cyber security research can be conducted to test hypothesis with measurable, repeatable results.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Cyber Security Advanced Technology Development	-	10.000	10.709

Description: Project plans for FY 2011 and beyond will be developed by the Office of the Director, Defense Research & Engineering (DDR&E) for execution by the DoD S&T organizations. This process will be conducted using the established Information Assurance and Cyber Security (IA/CS) Science & Technology and Computer Network Operations (CNO) Science & Technology Steering Councils chartered by DDR&E. The Cyber Security Applied Research program will build on the existing basic and applied research results and transition new successful applied research results to the Cyber Security Advanced Technology Development program element. The link between the Cyber Security Applied Research and Cyber Security Advanced Technology Development program elements is intended to create a mechanism to take existing basic research results and mature them to the point of incorporation into technology demonstrations.

FY 2011 Plans:
Initiate research activities in the candidate focuses within each technical area. Establish performance metrics for candidate performers. Evaluate results.

Candidate focuses of each technical area:

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603668D8Z: *Cyber Security Advanced Technology Development*	PROJECT P113: *Cyber Security Advanced Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Information Assurance / Computer Network Defense (IA/CND): -Harden critical points in the security architecture . -Reduce, rapidly and autonomously detect, and mitigate attack effects. -Reduce cyber reaction time for rapid system reconstitution to a known secure state. -Enable critical mission operation through cyber attacks in degraded environments. Computer Network Operations (CNO) -Improve understanding of the adversarial threat. -Increase adversary risk and work factor to decrease effectiveness during attack and exploitation attempts. -Disrupt and confuse adversarial attack planning cycles. Cyber Security Metrics -Measure effectiveness of existing countermeasures and the current level of DoD cyber security. -Measure impacts of new cyber security technologies. -Measure computer and network assurance levels for enhanced situational awareness. ***FY 2012 Plans:*** Continue research activities in each technical area began in FY 2011. Evaluate results.			
Accomplishments/Planned Programs Subtotals	-	10.000	10.709

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Specific programmatic performance metrics are listed above in the program plans section.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603670D8Z: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	9.761	11.510	18.179	-	18.179	20.743	21.150	21.603	22.252	Continuing	Continuing
P370: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*	9.761	11.510	18.179	-	18.179	20.743	21.150	21.603	22.252	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program is focused on demonstrating general-use, cross-domain capabilities/tools to support all Human Social Culture Behavior (HSCB) application areas. It will support advanced technology development in four areas: computational modeling capabilities; visualization software toolsets; training/mission rehearsal systems that provide forecasting capabilities for socio-cultural responses at the strategic, operational and tactical levels; and tools for improved data collection and functional architectures for managing and disseminating socio-cultural data, information and analysis products. The resulting technologies will provide: 1) cultural understanding/ overlays in existing intelligence, influence operations, and operations planning systems; and 2) training and mission rehearsal capabilities that go beyond strategic level planning tools (to the operational and tactical levels), providing broader, more in depth training/retention capability. A technical assessment capability will be established across all program line items as a means for identifying discrete and discriminating new technologies as they are developed. Research will result in modeling capabilities that generate and technically demonstrate validated adversaries to populate "what if" analyses for forecasting reactions of a defined class of adversaries to U.S./coalition actions; demonstration of strategic decision making tools that highlight political, religious, cultural, and related factors; training/mission rehearsal systems capable of using flexible underlying cultural models to train at the operational/tactical level; integration and demonstration of social, cultural and human behavior/cognition skills training systems for operational and strategic planning personnel in a coalition force context; visualization software toolsets that can be used as strategic decision making tools to account for political, religious, cultural, and other factors.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603670D8Z: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	10.395	11.510	19.187	-	19.187
Current President's Budget	9.761	11.510	18.179	-	18.179
Total Adjustments	-0.634	-	-1.008	-	-1.008
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.374	-			
• SBIR/STTR Transfer	-0.244	-			
• Other Program Adjustments	-0.016	-	-	-	-
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.982	-	-0.982
• Economic Assumptions	-	-	-0.026	-	-0.026

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603670D8Z: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*	PROJECT P370: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P370: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*	9.761	11.510	18.179	-	18.179	20.743	21.150	21.603	22.252	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program is focused on demonstrating general-use, cross-domain capabilities/tools to support all Human Social Culture Behavior (HSCB) application areas. It will support advanced technology development in four areas: computational modeling capabilities; visualization software toolsets; training/mission rehearsal systems that provide forecasting capabilities for socio-cultural responses at the strategic, operational and tactical levels; and tools for improved data collection and functional architectures for managing and disseminating socio-cultural data, information and analysis products. The resulting technologies will provide: 1) cultural understanding/ overlays in existing intelligence, influence operations, and operations planning systems; and 2) training and mission rehearsal capabilities that go beyond strategic level planning tools (to the operational and tactical levels), providing broader, more in depth training/retention capability. A technical assessment capability will be established across all program line items as a means for identifying discrete and discriminating new technologies as they are developed. Research will result in modeling capabilities that generate and technically demonstrate validated adversaries to populate "what if" analyses for forecasting reactions of a defined class of adversaries to U.S./coalition actions; demonstration of strategic decision making tools that highlight political, religious, cultural, and related factors; training/mission rehearsal systems capable of using flexible underlying cultural models to train at the operational/tactical level; integration and demonstration of social, cultural and human behavior/cognition skills training systems for operational and strategic planning personnel in a coalition force context; visualization software toolsets that can be used as strategic decision making tools to account for political, religious, cultural, and other factors.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Modeling Capabilities	3.416	4.029	6.335
Description: Generation and technical demonstration of validated synthetic adversaries driven by underlying HSCB computational models will be the key to "what if" analyses for forecasting reactions to U.S./coalition military, economic, or political actions for defined classes of adversaries. Integrate and demonstrate decision making support tools useful within programs of record and operational user analysis, planning and execution systems for political, religious, cultural and other factors. Develop tools and software products to integrate socio-cultural models and information into existing intelligence, training, operational planning, and Command and Control systems. Support specific operational planning tasks for selected government partners via limited technical demonstration in user settings and by leveraging: other models; work performed in visualization; cultural understanding; the development of specific and generalized cultural models. In addition, working with operational partners HSCB models will be tested in realistic environments by representative users.			
FY 2010 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603670D8Z: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*	PROJECT P370: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Successfully integrated a rule-based probative reasoner (PRIME) and an agent based simulation (MADNeSS) into a single hybrid modeling tool that enables the embedding of socio-cultural reasoning into course of action planning and analysis. Demonstrated ability of the tool to support the Military Decision Making Process (Set Corp). Developed interlinked system dynamics macro-level model and agent-based micro-level simulation for modeling the first- and second-order effects on inter-communal conflict of alternative applications of Diplomatic Infrastructure Military Economic (DIME) actions (specifically informational actions for this proof of concept) available to U.S. military planners (NSI). Completed Phase 1 of an initial model-based prototype tool for supporting influence operations; specifically focusing on target audience analysis, the core operational task to support means-end chaining as a key theoretical and methodological base for building and using computational models for the target audiences (Soar Tech). Integrated HSCB-developed S&T into latest accredited-and-deployed SAVANT/POWER Tool version (Charles River). Supported USPACOM classified modeling effort where game theoretic models (Senturion) are being used to assist in operational decision making. For USSOCOM, modified an influence operations doctrine modeling program to allow interoperability with emerging influence operations models. ***FY 2011 Plans:*** Integrate and demonstrate decision making support tools within Planning/Execution/Re-Planning systems, and socio-cultural models and information into existing intelligence, training, operational planning, and Command and Control systems. Demonstrate operationally relevant sentiment and group extraction, and link analysis. Develop and demonstrate tools to determine the second and third order effects of non-kinetic courses of action (COA), including effects on unintended audiences. Identify, simulate, and forecast the interactive effects of kinetic and non-kinetic COA. ***FY 2012 Plans:*** Continue research and demonstration of integrated decision making support tools, with particular focus on hybrid modeling to forecast both near and long-term effects of both kinetic and non-kinetic COA. Demonstrate how extracted sentiments and groups support COA development.			
Title: Visualization Software Toolsets ***Description:*** This program will demonstrate a first generation decision-making toolset that includes HSCB factors. Visualization software toolsets and integration of a common architecture visualization tool that will be used in operational/strategic decision making is the goal. These tools are required to account for political, religious, cultural, and other factors as well as to vertically integrate cultural information into a military operational environment. Common, generalized (strategic to tactical) tools for visualization of DIME COA, and Political Military Economic Social Information Infrastructure (PMESII) effects on the battlefield, or during Security, Stability, Transition and Reconstruction phases do not exist. HSCB will focus on providing visualization capabilities that support a richer understanding of socio-cultural data in concert with other warfighter data.	2.440	2.709	4.525

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603670D8Z: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*	**PROJECT** P370: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Conducted HSCB Geospatial Visualization Analysis and Modeling Workshop that resulted in a robust understanding of how visualization can support strategic, operational, and tactical decision making for today's warfighters. In support of the Joint Military Support Command and the Military Information Support to Operations (MISO) community, transitioned visualization component to SAVANT/POWER Tool. This will result in user-community test/evaluation and demonstrate the transition path provided by SAVANT-HSCB. Implemented prototype model and integration approach (Charles River Analytics). ***FY 2011 Plans:*** Complete system design of open source modeling visualization framework architecture, and develop SOA compliant prototype. Demonstrate visualization tool sets that can access underlying geospatial and socio-cultural data, evidentiary information, and associated uncertainty in the same visualization. ***FY 2012 Plans:*** Demonstrate visualization methods and tools that can deal with the most challenging visualization issues, including sparse data sets, highly volatile underlying data, and inherent complexity of socio-cultural behavior dynamics.			
Title: Training/Mission Rehearsal Systems	1.953	2.302	3.621
Description: Current methods and procedures for integrating cultural information into military operations do not satisfy requirements for ongoing operations. Specifically, they lack flexibility to rapidly deliver just-in-time training for new regions of interest and emerging mission areas (e.g. transition and reconstruction). Training systems capable of using flexible underlying cultural models to train at the operational/tactical level are required. These capabilities when combined with socio-cultural operational planning tools, will allow users to understand the socio-cultural environment. It is then possible to plan, and potentially rehearse non-kinetic actions prior to execution, make changes, and thus tailor outcomes. ***FY 2010 Accomplishments:*** Delivered training guide, organized around seven vignettes that describe interactions between American warfighters and Afghans. U.S. Army Special Operations Command, Marine Corps Intelligence Activity and the Marine Corps Center for Advanced Operational Culture Learning are already using the booklet and plan to purchase more (ARA Klein). Successfully demonstrated integration of physical and cognitive modeling, and developed and demonstrated authoring tools to edit scenarios and avatars. Technology in use by components (JFCOM, USAF NCE). Completed Phase 1 of developing culture-general cross-cultural skill training that will help military personnel move more easily into different cultures regardless of proficiency in a given culture. Developed learning objectives, identified the cross-cultural competence skills, and developed 3 scenarios and video vignettes, and instructional materials. The system is fully functional and ready for assessments and further development of content (University			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603670D8Z: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*	PROJECT P370: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
of Southern California). Completed design of conversational agents that will interact with trainees based on parameters and rules that instantiate cultural influences on dialogue (Alelo). ***FY 2011 Plans:*** Complete a cognitive task assessment that will identify specific cross-cultural competencies that are necessary for a range of military specialties. Emphasize modeling and simulation of human behavior that will support virtual training at the tactical level. Research and develop multi-platform software for delivering socio-cultural and capability use training. ***FY 2012 Plans:*** Multiple methodologies for training are employed- virtual, immersive, deployable, live simulation, instructor led. FY 2012 work will focus on researching how these methods can and will be used synergistically for cultural training, helping to determine which methods are most effective for cultural training.			
Title: Socio-Cultural Data Collection and Management ***Description:*** Develop and demonstrate tools for improved collection of socio-cultural behavior data, particularly at tactical level and for denied areas. Generate functional architectures for managing and disseminating socio-cultural data, information and analysis products vertically and horizontally within DoD. Develop and demonstrate tools to support ingest of unstructured data and structuring of data for use in computational modeling for intelligence analysis, operations analysis, and decision support. ***FY 2010 Accomplishments:*** Developed proof of concept modeling and simulation architecture and successfully integrated additional third party modeling tools and an open source visualization tool. Also demonstrated the ability to perform automated COA analysis and optimization, employing new capabilities, in support of an influence operations use case (Impact Computing). Delivered assessment of data acquisition and transformation to complement the TRADOC/TRISA experiment to capture unconventional warfare and irregular warfare data for modeling and simulation use by complementing the Human Terrain Teams data collection standard and threshold with that of the US Army Special Operations Forces (ARSOF) for the Athena project (ViaGlobal). Designed and inserted semi-automated approaches to tracking socio-cultural sentiments from web sources into the existing BBN Media Monitoring System (MMS). The MMS has been funded by the Combating Terrorism Technical Support Office (CTTSO) Surveillance, Collection and Operations Support subgroup (SCOS) and deployed in more than 17 sites both in the United States and overseas. The sentiment tracking capability was tested with the Special Operations Center, Pacific Command (SOCPAC) and showed significant positive impact on time required to complete analysis (BBN). Built a web-based system, grounded in integrated, semantically annotated knowledge, references and databases that members of the complex operations community can use to answer questions and do	1.952	2.470	3.698

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603670D8Z: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*	PROJECT P370: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
modeling/simulation (Milcord). Conducted National Academies Committee on Human-Systems Integration workshop focused on the methods and tools relevant to the subject of Unifying Social Data Frameworks. ***FY 2011 Plans:*** Build functional and technical architectures for managing and disseminating data. Demonstrate the utility of semi-automated tools that military personnel with little or no training can use to collect and interpret unstructured socio-cultural behavior data. Develop and demonstrate methods and tools for validating qualitative data. ***FY 2012 Plans:*** Research and develop tools for collecting valid socio-cultural data in denied or restricted environments. Develop and demonstrate an integrated set of model description data (metadata), information systems, and procedures that will facilitate assessing the software engineering quality of socio-cultural behavior models, their theoretical foundation and the translation of theory into model constructs.			
Accomplishments/Planned Programs Subtotals	9.761	11.510	18.179

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• PE 0602670D8Z BA 2: *HSCB Applied Research*	7.639	8.854	14.858		14.858	17.057	17.432	17.821	18.359	Continuing	Continuing
• PE 0604670D8Z BA 4 : *HSCB Research & Engineering*	6.295	6.845	10.272		10.272	12.926	13.180	13.440	13.878	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	20.992	18.916	17.888	-	17.888	22.234	22.671	23.164	23.864	Continuing	Continuing
P680: *Manufacturing Science and Technology Program*	20.992	18.916	17.888	-	17.888	22.234	22.671	23.164	23.864	Continuing	Continuing

A. Mission Description and Budget Item Justification

Defense Wide Manufacturing Science and Technology (DWM S&T) provides the Department with a comprehensive manufacturing program to achieve the strategic goals of focused technology, improved acquisition across the life cycles, and cost-effective logistics. By designing for manufacturability early in development, anticipated results will have an impact on increasing reliability and decreasing the life cycle burden of weapon systems.

DWM S&T will: 1) address manufacturing enterprise issues beyond a single Component or platform and, 2) establish and mature cross-cutting manufacturing processes required for transitioning emerging technologies which impact the time lines, affordability, and productivity of acquisition programs and shorten the deployment cycle times.

The DWM S&T program is fundamental to a coordinated development process. Concurrent development of manufacturing processes with the technology prototype enables the use of emerging technologies such as ceramic matrix composites for advanced turbine engines, affordable low observables materials for increased survivability in the kill chain of high value targets, and system-on-chip electronics for communication platforms.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	14.638	18.916	18.855	-	18.855
Current President's Budget	20.992	18.916	17.888	-	17.888
Total Adjustments	6.354	-	-0.967	-	-0.967
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-2.100	-			
• SBIR/STTR Transfer	-0.432	-			
• Other Program Adjustments	8.886	-	-	-	-
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.473	-	-0.473
• Defense Efficiency - Contractor Staff Support	-	-	-0.468	-	-0.468
• Economic Assumptions	-	-	-0.026	-	-0.026

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P680: *Manufacturing Science and Technology Program*		
Congressional Add: *High Performance Manufacturing Technology Initiative*	7.500	-
Congressional Add: *California Enhanced Defense Small Manufacturing*	1.600	-
Congressional Add Subtotals for Project: P680	9.100	-
Congressional Add Totals for all Projects	9.100	-

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	PROJECT P680: *Manufacturing Science and Technology Program*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P680: *Manufacturing Science and Technology Program*	20.992	18.916	17.888	-	17.888	22.234	22.671	23.164	23.864	Continuing	Continuing

A. Mission Description and Budget Item Justification

The DWM S&T program has a two-pronged approach: 1) technology initiatives and 2) specific single projects. Technology initiatives, in collaboration with the Joint Defense Manufacturing Technology Panel (JDMTP) and industry, identify and develop investment strategies to advance the manufacturing processes needed to support the specific technology. Above-the-shop-floor investments focus on new manufacturing processes that have potential to significantly improve manufacturing efficiencies. Single specific projects address investment opportunities not associated with selected technology initiatives and enable the program to respond to urgent, compelling manufacturing needs and provide seed funding to more high risk-high payoff technologies.

Data calls will be launched through two methods to identify technology initiatives and single specific issues requiring investment. One method is through the JDMTP. The JDMTP is comprised of the ManTech Directors from the Services, Defense Logistics Agency, Missile Defense Agency (MDA) and Office of Secretary of Defense (OSD). The call will be distributed through the ManTech Directors to the four JDMTP sub panels: Metals Processing and Fabrication Subpanel, Composites Processing and Fabrication Subpanel, Electronics Processing and Fabrication Subpanel and Advanced Manufacturing Enterprise Subpanel. Potential candidates will be evaluated by the JDMTP based on criteria set forth in the call and announcements and down-selected for further development prior to final selection. The other method is through a Broad Agency Announcement to industry. Priority will be given to investments that support affordability and producibility of critical enabling manufacturing technologies that cut across multiple platforms. Investments will also balance defense priorities in specialty materials, electronics, propulsion and power, and manufacturing processes including "above the shop floor" (lean and business technologies facilitating interoperable manufacturing). Final projects are selected by the OSD ManTech Director in collaboration with the JDMTP and in consultation with the Office of Director for Research and the Director, Defense Research & Engineering. Technology initiatives and projects will be executed at the Component level.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Ceramic Matrix Composite (CMC) Manufacturing Initiative	0.380	-	-
Description: Turbine engines are the main propulsion system for virtually all Department of Defense aircraft and helicopters and also power an array of ships and tanks. Improvements in manufacturing process technology must be achieved with each new generation of engines for these challenging new designs to be manufactured with acceptable quality, cost, and delivery rate to meet the warfighters' needs. This initiative seeks to advance and establish the manufacturing technologies for CMCs needed to support the development, production and sustainment of advanced gas turbine engines. Successful efforts will enable the use of CMCs for defense systems, resulting in significant life cycle cost avoidance through improved fuel efficiencies and greatly reduced maintenance costs over metallic flaps and seals and vanes for turbine engines.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	PROJECT P680: *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Program Outputs: Demonstrate the advancement of CMC manufacturing technologies that result in: 1) improved non-destructive evaluation (NDE) techniques 2) reduced production time, 3) consistent performance of the CMC materials, and 4) reduced unit cost such that CMC materials can be incorporated in Advanced Turbine Engines resulting in 1) reduced weight, 2) increased engine performance, 3) decreased maintenance, 4) increased production flow through, and 5) increased safety. Advanced manufacturing material processes will reduce re-work, increase production capacity, and enable production rate requirements for engine components. Life cycle cost avoidance for this initiative is projected in the billions, with technology maturity within three to five years. ***FY 2010 Accomplishments:*** 1) In-line tow coating performed 2X and 4X length full scale validation runs using simulated inline process. 4X length inline process reduces labor costs by 60%. Specification was written for in-line machine based on validated experimental results. Real time process metrology task demonstrated capability to measure coating thickness using Fourier Transform Infrared Spectroscopy method. Real time method for tow coating thickness was previously non-existent. Treatment of deposition tube surfaces leveraged to other coating runs yielding 2X increase in run length. Post-processed mechanical test data from final task 2.5 runs, and began integrating into final report. (2) Demonstrated coating 35 meters of carbon cloth, longest run ever demonstrated; 40% increase compared to baseline; demonstrated boron nitride coating with 5th lance; reduced fabric inspection time by 33%. OEM requirements and documentation were coordinated. Supplied samples to support development of prototype thickness measurement systems. (3) Non-destructive evaluation (NDE) – General Electric completed fabrication of 4 generic airfoils, cut plans established for specimens, preliminary trials and discovery experiments complete for all NDE technologies on flat specimens. NDE data acquisition complete on flat specimens. (4) For 3D Airfoil inspections, a study was conducted to evaluate cycle time elements of the inspections, part movement, and analysis to identify areas for future cycle time reduction. GE has reviewed and approved the Rolls-Royce draft on shiny measurement systems and a draft of an optical standard for the Aviation industry and provided feedback for incorporation. The 3DAI system has been shipped to GE-Global research for additional software to enable it to be incorporated directly into the Rutland production facility. ***FY 2011 Plans:*** 1) Compile and submit In-line tow coating final report. Work General Electric procurement activity for in-line machine. 2) Silicon Carbide Fabrics - Demonstrate larger batch size, goal of 80 meters; perform reactor condition trials using 5th lance.			
Title: Low Observable Material Manufacturing Initiative ***Description:*** Manufacturing Scale-up for Low Observable (LO) Materials and Platforms	0.874	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	PROJECT P680: *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Program Outputs: Three key areas: 1) precision component fabrication; 2) multi-spectral LO integration; and 3) minimization of sustainment cost and cycle time drivers. Investment in the three key areas is projected to have a significant multi-million dollar payback throughout the Future Years' Defense Plan and beyond. Technology is expected to mature beginning in FY 2010. ***FY 2010 Accomplishments:*** Completed final scale-up of the key project to meet initial DoD-level needs. Completed additional testing. Overall goal of 50 times increase in throughput and ten times reduction in cost.			
Title: System-On-Chip (SOC) ***Description:*** Enables smaller, less costly Global Positioning Systems (GPS) by developing the manufacturing technologies to enable reduced weight, size and power consumption to provide leap-ahead communication and sensor capability by maturing technologies that move heavy, high volume/power demand systems to small, power efficient System-On-Chip (SOC) packaging technology. Small form factor GPS components will be available to designers for incorporation into a wide variety of weapons systems. Program Outputs: Moves the basic packaging technology from a manufacturing proof-of-concept to qualification for application in the Ground-Based GPS Receiver Application Module (GB-GRAM) as the initial adopter. DWM S&T investments will refine the fabrication process, develop design rules for complex integration of non-optimized electronic devices into very high density packages, and accelerate the development and integration of the receiver module that can be used for downstream system application. The combination of bare die, high density silicon interposers, 3-dimensional die stacking, advanced RF quality laminates, and the use of micro-passive surface mount devices will be used to achieve a 62% volume reduction over the present GB-GRAM circuit card assembly. ***FY 2010 Accomplishments:*** Radio Frequency (RF) module development was completed. Fabricated more than 250 GPS modules, with recent process yields of 96%. Demonstrated better than Class 2 reliability. Parts completing internal reliability testing showed an estimated mean time between failures of greater than 100 years. Four GB GRAM modules were built with JV2 Jaguar ASICs for engineering evaluations. Achieved a 20.5% surface area reduction over the present Type II GB-GRAM layout, which meets the APTIDS project goal for surface area reduction. ***FY 2011 Plans:*** Complete the RF module development and testing. Deliver functional RF modules (with test data). Complete the GPS module development and testing. Deliver functional GPS modules (with test data). Complete the GB-GRAM detail design and	1.421	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	PROJECT P680: *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
development. Achieve availability of Jaguar application specific integrated circuit from fabrication. Make a Go/No Go decision on the manufacturing implementation in the Ground-Based GPS Receiver Application Module .			
Title: Prosthetics and Orthotics Manufacturing Initiative	0.826	-	-
Description: This project was previously titled "Custom Composite Orthotics and Prosthetics" in the FY 2009 President's Budget. New manufacturing technologies are required for the development of custom composite orthotics and prosthetics for injured men and women of the armed services. Orthotics and prosthetics present a two-fold challenge in that they contain a high degree of customization in design and a labor intensive means of manufacturing. Recent advances in solid modeling, reconfigurable tooling, room temperature resin chemistry, automated fabrication of custom fiber architectures, and novel resin infusion methods have created the potential to develop a highly integrated, low cost, custom orthotic and prosthetic technology to address the unique requirements and needs of the armed services. Rapid prototyping technologies and new composite manufacturing solutions have shown the potential to provide a 24-hour turnaround time for component fabrication. The current state-of-the-art for orthotics is to thermoform plastic materials such as polypropylene to create a custom fit orthotic. New manufacturing techniques integrated with advanced polymer composite technologies have allowed for initial prototyping work using woven glass reinforced adiprene. These new materials are compliant, but sufficiently rigid for use with prosthetics. The integration of composite materials could provide up to a 20 percent weight savings and an approximate 40 percent reduction in skin contact over current thermoform plastic solutions. Outcome: New rapid prototyping and affordable manufacturing processes resulting in 20 percent weight savings and 40 percent reduction in skin contact. Improved reliability of new composite prosthetics. ***FY 2010 Accomplishments:*** Formally cleared the use of conformal foams and resins at the Navy Medical Center – San Diego. Scheduled a trial event for early FY11. Completed the Magnetic resonance imaging segmentation of patient data . SensorTech has planned the commercial launch of its sensor socket product for early FY11. Mentis Sciences Inc. began recording and documenting all techniques to support automated manufacturing. Two commercial manufacturers (Ossur and Friddles Orthopedic) are interested in acquiring the rapid prototyping manufacturing cells that would provide prosthetics to the military at reduced costs. Ossur is a very large name in the business and would result in significantly increased visibility and use of the technology. Friddles Orthopedic is a manufacturer that sells directly to medical practitioners. ***FY 2011 Plans:*** Efforts will continue to accumulate metrics to quantify project benefits. The team will continue working with Ossur and Friddles Orthopedic to commercialize the technology.			
Title: Direct Digital Manufacturing Inspection and Distortion Control	0.874	0.936	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Increase the affordability of electron beam additive manufacturing (EBAM) titanium 6-4 components for air, sea, and land based systems. Develop thermal control and deposition strategies to control aluminum loss and minimize distortion during deposition. Optimize non-destructive inspection techniques. . ***FY 2010 Accomplishments:*** Independently varied thermal control and deposition parameters to correlate to aluminum loss. Compared multiple distortion control methods and down selected to the best approach or combination to further develop. Explored non-destructive inspection methods for their suitability to the as-deposited wavy surface prior to machining. Conducted testing for aluminum loss control, and determined that loss is repeatable and controllable. Compared multiple distortion control methods and downselected to the best approach to further develop. Created all needed specimens for non-destructive testing and delivered them to the test facilities. ***FY 2011 Plans:*** Optimize distortion control. Demonstrate a 90% probability of detection of defects at a 95% confidence level on EBAM deposits that are several inches thick. Transition will be on the F-35 flaperon spar. The goal is to begin production implementation of EBAM flaperon spars in low rate initial production (LRIP) block 7. The long-lead for LRIP 7 starts in mid-2013.			
Title: Emerging Manufacturing ***Description:*** Emerging Manufacturing is a series of new efforts addressing advanced manufacturing technologies and enterprise business practices for defense applications. Initiatives and projects under development will continue to identify and transition advanced manufacturing processes/technologies that will achieve significant productivity and efficiency gains in the defense manufacturing base. The key focus areas are: manufacturing technologies to accelerate delivery of technical capabilities to impact current warfighting operations; to prepare for an uncertain future; and to reduce the cost, acquisition time and risk of our major defense acquisition programs. The Out of Autoclave Bismaleimide program developed out of autoclave aerospace composites with service temperature uses of up to 350F. The Carbon Nanotube Cable project will demonstrate high volume quality controlled carbon nanotube fiber and sheet for signal and power transmission. The technology involves replacing copper in signal and power cables with carbon nanotubes, which would greatly reduce its weight, subsequently causing a significant increase in fuel efficiency and overall performance. The Extreme Breakover Diode (XBOD) project will mature manufacturing processes for a high-speed, high-voltage, solid-state switches for directed energy weapon applications.	1.488	4.011	0.641

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The Direct Write Electronics project will enable electronic circuits to be printed directly from computer aided design files, much like printing text on a piece of paper from a word processor file. Direct Write circuits will revolutionize electronics manufacturing & fabrication techniques and enhance warfighter platform effectiveness through an increase in sensor/instrumentation placement. Cost savings for each sensor/circuit placement are realized by eliminating all associated installation tooling, reducing one man-day of assembly time (per sensor application), and eliminating inspection criteria for cutting, drilling, and assembly of sensor subcomponents. The Copper Nanoparticle Solder-Free Electronics Scale-up project will demonstrate a method for producing printed circuit boards that does not require solder. The project scope is to produce test quantities of copper nanoparticles, use them to assemble a representative circuit board, and evaluate their performance. ***FY 2010 Accomplishments:*** The Out of Autoclave Bismaleimide program fabricated several trial panels using dam and damless bagging schemes, and both methods produced good results. Six test panels began non-destructive inspection at WPAFB. Received material for infusion test panels and the bagging and manufacturing plan for them was completed. The Carbon Nanotube Cable project began (1) increasing the throughput of carbon nanotube wire and sheet systems and (2) producing and test demonstration cables sufficient to prove this technology. Conducted several iterations of CNT cable tests. Preliminary results look promising with significant improvements over earlier test samples. Began production qualification runs for the HTF system design. Began HTF system integration planning. The XBOD project awarded a contract in September 2010, and began generation of XBOD switching specifications and test plans. The Direct Write Electronics project awarded a contract in September 2010, initiated efforts to create a capacitor and resistor fabrication library, and extended tool-path conversion software to support standard electronic design packages. The Copper Nanoparticle project awarded a contract in September 2010 and initiated efforts to scale-up the nanocopper powder production. ***FY 2011 Plans:*** The Carbon Nanotube Cable project will optimize the manufacturing process resulting in an affordable, high quality carbon nanotube cable. The XBOD project will continue to generate XBOD switching specifications and test plans, and conduct an XBOD trade study. The project will also develop an XBOD trigger circuit and begin design/fabrication/verification of test beds. The Direct Write Electronics project will continue to develop the library, automate the tool-path generation, and it will perform component			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	PROJECT P680: *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
testing that is representative of the planned actual component usage. The Copper Nanoparticle project will produce the copper nanoparticles, assemble a circuit board with them, and evaluate the circuit board's performance. ***FY 2012 Plans:*** The Carbon Nanotube Cable project will develop a vendor transition production demonstration plan and a customer transition plan, and platform application tasking will be performed by Northrop Grumman and Sikorsky. The XBOD project will optimize back-end processing for the 2nd generation package and test the 2nd generation XBOD.			
Title: Chip Scale Atomic Clock ***Description:*** Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems require precise timekeeping even if the Global Positioning System (GPS) is unavailable. The size, weight, power, and cost components of conventional atomic clocks are too high for tactical applications. Chip Scale Atomic Clock (CSAC) provides improved long-term frequency stability that gets integrated into long-term time accuracy. The focus of this project is to leverage DARPA investments in the CSAC technology to reduce operational costs and transition beyond custom fabrication of the current CSAC. Mass manufacturing capabilities will be enabled with the development of batch processes, manufacturing tools, and automated assembly and test. Development of a network of multiple vendors to foster competition and ensure a viable supply base is a complementary goal. Successful performance will enable an environment of continued operation of critical Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance systems, regardless of the presence or absence of GPS. The ability to rapidly reacquire GPS military code in a hostile Electro Magnetic Interference (EMI) environment is an additional targeted benefit. ***FY 2010 Accomplishments:*** Contracts awarded in September 2010. Increased manufacturing readiness by improving current manual assembly in a lab environment to mass manufacturing capability. Focused on developing batch processes, manufacturing tools, and automated assembly and test of the physics package. ***FY 2011 Plans:*** Demonstrate a production-ready manufacturing process for resonance cell and physics package fabrication on chip scale atomic clocks. Initiate engagement with integrated product team core members, providing periodic program status reviews. ***FY 2012 Plans:*** Advance the manufacturing process toward an end-of-project objective of a TRL7 and MRL8. Conduct laboratory testing in relevant environments at the end of each phase, sending samples for system integration and system-level testing.	1.584	3.571	8.064
Title: Fiber Placement of Out of Autoclave Composites	0.810	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: An alternative to the traditional use of autoclaves in the production of large carbon fiber composites is Out of Autoclave (OOA) processing, which uses far less expensive ovens. Fabrication of large carbon fiber composite parts is limited by the small number of existing large autoclaves that are currently tied up with Boeing 787 and F-35 production. In addition, the high capital cost of buying large autoclaves is prohibitive. The ability to use less expensive ovens, coupled with the use of resins at lower cure temperatures, will allow more suppliers to enter the market and fabricate a greater number of larger carbon fiber composite parts at lower costs. Outcomes: The initial phase of this project focuses on the development of the fiber placement process. The goal is to demonstrate the lay down rates required to meet projected requirements and the fabrication of quality laminates with autoclave-equivalent mechanical performance. Candidate aircraft for this technology are: Air Force/Army Joint Future Theatre Lift (C-130 successor) – 180' wingspan and 140' fuselage; National Aeronautics and Space Administration (NASA) Ares V - 33' diameter; Navy P-8 Raked Wing Tip. ***FY 2010 Accomplishments:*** Established material and process parameters to be evaluated, defined the equipment to be used, defined the parts to be manufactured, determined materials to be ordered. Lockheed Martin completed fiber placement for solid laminate and honeycomb panels, and quality assessments were started. Boeing completed fiber placement for 12 quasi panels, and began non-destructive inspection. ***FY 2011 Plans:*** Methods of fabricating out of autoclave composite components via fiber placement will be defined for each commercially available domestic fiber placement machine. Demonstrate methods on representative aerospace parts. Techniques will be published and distributed throughout the composites supplier base.			
Title: Rapid Manufacturing of Aerospace Structures ***Description:*** Allow faster and more affordable access to low-volume, state-of-the-art production capabilities for acquisition of defense unique technologies for low density, high demand systems. Rapid prototyping includes many different fabrication technologies. Stereo Lithography (SL), selective laser sintering (SLS), laminated object manufacturing (LOM), and fused deposition modeling (FDM) are a few examples. These Rapid Prototyping processes have already had the effect of both improving products and reducing their development time. Rapid Manufacturing is an attempt to transition these prototyping techniques to the manufacturing floor. This form of manufacturing can be incredibly cost-effective and the process is far more flexible than conventional manufacturing. Rapid Prototyping processes have been shown to	0.146	1.672	1.692

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	PROJECT P680: *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
be economically feasible for use in the manufacture of non structural parts in quantities. This Rapid Manufacturing effort will focus on the use of these Rapid Prototyping processes in the fabrication and/or assembly of Aerospace Structures. ***FY 2010 Accomplishments:*** Contract awarded September 2010. Initiated programs to demonstrate the use of rapid manufacturing in the fabrication and/or assembly of aerospace structures. Examples of parts that could be fabricated include but are not limited to control surfaces, edges, and ducting. ***FY 2011 Plans:*** Fabricate subscale parts to assess the unique capabilities of rapid prototyping technologies. Initial testing will be performed on these subscale articles to ensure they meet to the structural design requirements ***FY 2012 Plans:*** Develop demonstration articles and associated costing data to validate the ability of rapid manufacturing techniques to fabricate timely affordable structural components.			
Title: High Performance Manufacturing Technology Initiative ***Description:*** This initiative funds a collection of projects to identify, advance, and accelerate manufacturing processes and technologies and business practices that will achieve productivity and efficiency gains in the defense manufacturing base. Activities include maturing manufacturing process development, strategic planning and roadmapping, development of prototypes and test beds, workshops, incentives, and outreach, model based enterprise, supply chain management, and technical data package development. FY 2010 funded through congressional add (as adjusted for DoD Appropriation General Provisions). FY 2011 and beyond funded out of President's budget. ***FY 2010 Accomplishments:*** Augments congressional add identified below. Developed and tested a software framework and algorithms to provide more effective supply chain risk management. Updated the Requirements-Based Cost Modeling System to support more accurate evaluation of new requirements during a cost assessment. The Improved Design Effectiveness Through Next Generation Visualization (IDEV) project enhanced the software's collaboration features and improved device input support. Graphics from NX modeling software were successfully distributed to 3D display while simultaneously viewing the remote desktop. Software updates were successfully deployed to Raytheon and Rockwell Collins. Mechdyne completed the development of its software product, and prepared to demonstrate and release the product in late 2010.	1.019	0.502	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	PROJECT P680: *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The Risk Assessment for Next Generation Supply Chain Readiness (RANGER) project identified relationships between risk drivers and performance measures and created a network map of these relationships. Testing and validation in test beds was conducted using Joint Direct Attack Munition (JDAM) as a test case. The software was demonstrated at three industry conferences. Six defense organizations and four companies expressed an interest in the RANGER program and they would like to be involved in providing the program team with user requirements and early software tool evaluators. The Cost Modeling for Enterprise Transformation (COMET) project demonstrated the ability to extract information from CAD files of multiple types and input the data directly into a cost model. Used STEP design model software to input information into a cost model. Completed development of the ability to extract actual manufacturing data and input it into the cost model, using Boeing databases. COMET surpassed the capabilities of Boeing's previous cost modeling initiative. Awarded new contracts in September 2010 for the following new projects: Prime Supplier Software, Improving Manufacturing Supply Chain Design and Resiliency, Customer/Supplier Interoperability During Collaborative Design. ***FY 2011 Plans:*** Validate the supply chain risk management software against real world cases. Develop a "stand-alone" version of the Requirements-Based Cost Modeling System for small businesses, refine the operation of the system to satisfy security requirements in processing sensitive information (specifically for DoD utilization), and develop a commercialization model and channels to deployment.			
Title: Field Assisted Sintering Technology ***Description:*** This effort addresses limitations of conventional sintering manufacturing processes. Conventional sintering takes from hours to days in a sintering oven, and the beneficial characteristics of nano-structured materials are lost when the material is sintered. Field Assisted Sintering Technology (FAST) is a new technology that has potential to dramatically reduce cycle time and manufacturing cost for all materials, and to maintain the beneficial characteristics of nano-structured materials. The FAST process passes a pulsed direct current through the part while it is pressed in a die, and the combination of rapid heating and compressive loading results in fine grained, fully dense materials in short processing times that are not possible with conventional sintering processes. Many parts that are made with a powder press and sinter process are candidates for FAST, but this project will focus on ceramic body and vehicle armor, tungsten kinetic energy penetrators, IR windows, heat sinks for electromagnetic propulsion cooling, and hypersonic and high temperature for enhanced performance jet propulsion. Program Outputs: The project will mature the technology, resulting in reduced cost and cycle times for conventional materials, and higher performance for nano-structured materials.	0.364	0.870	0.677

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	PROJECT P680: *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Awarded the contract September 2010. Selected candidate powder materials, optimized process parameters for those materials, and characterized material properties. ***FY 2011 Plans:*** Manufacture prototype hardware, demonstrate prototype effectiveness, document process efficiency and cost savings. ***FY 2012 Plans:*** Implement process for full scale components, document material and process specifications, support transition to industry for selected components.			
Title: Advanced Body Armor ***Description:*** While current body armor is effective, it is too heavy for some threats, environments, and operations. Even a 10% reduction in system weight would significantly increase warfighter acceptance, mobility, agility, and endurance. This effort will leverage prior DoD investments to mature three complimentary manufacturing technologies that will reduce body armor weight by 10% - 20% while improving ballistic performance and flexibility. Cost will be reduced 5% - 30% and cycle time will be reduced by 10X-100X. Program Outputs: The project will mature three manufacturing technologies for lighter weight armor from a capability to produce the technologies in a laboratory to a capability to produce them in an environment representative of a production facility. The three technologies are: 1) Incremental Pressure Application System (IPAS), which allows production of highly flexible “hard” and “soft” composite armor in same host material with no loss of ballistic and structural continuity in fibers. 2) Hotblox processing, which will reduce cost and cycle time for production of a composite material that will reduce armor weight by 10% while maintaining ballistic performance. 3) Verco processing, which will allow production of extremely hard boron carbide ceramic armor that conforms to soldier body shapes. ***FY 2010 Accomplishments:*** Awarded the contract September 2010. Began developing prototype tooling and production processes for all three technologies. ***FY 2011 Plans:*** Optimize process parameters and develop next-generation tooling. Produce prototype armor for ballistic and related testing. Begin integrating the materials and manufacturing processes into systems for the initially targeted applications. ***FY 2012 Plans:***	0.728	2.007	1.692

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	PROJECT P680: *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Conduct ballistic and related testing, integrate the most successful technologies, and scale up to LRIP capacity.			
Title: Large Affordable Substrates	0.292	1.672	1.692
Description: High performance infrared (IR) focal plane arrays (FPAs) are grown on Cadmium Zinc Telluride (CZT) substrates that are currently only available in relatively small wafer sizes (6cm x 6cm) from a single foreign source. This effort will leverage prior and concurrent Department of Defense (DoD) investments to enable a domestic source to manufacture 12cm x 12cm CZT substrates. The results will be reduced cost and assured availability of CZT substrates that will enable affordable, high performance ground and air IR sensor systems with rapid wide area search, long range ID, and dual band multispectral aided target detection capability against difficult targets while on-the-move. Program Outputs: Large, affordable CZT substrates from the domestic source will initially transition on FPAs for the 3rd Gen FLIR Engine Engineering Manufacturing Development program, to be followed by multiple transitions to other DoD weapon systems including the Army's Common Sensor Payload, Air Force's High Stare, Missile Defense Agency's SM-3 Programs, and also rapid Prototype Systems (LRAS3) to be deployed in theatre. ***FY 2010 Accomplishments:*** Awarded contract September 2010. Initiated baseline lots ***FY 2011 Plans:*** Conduct tradeoffs, select initial process improvement targets for boule growth and substrate surface finish, and complete baseline lots through array fabrication (substrate wafer size of 9x9 cm with surface roughness of 2.0 nm). Manufacturing will be matured to a capability to produce a prototype system in a production environment. ***FY 2012 Plans:*** Complete program lot 2, complete boule growth process improvements and initial surface finish, complete baseline lots through FPA testing, complete program lot 1 (wafer size increase to 12x12 cm and surface roughness of 1.5 nm), and complete program lot 3 (MRL7/8; pilot line capability demonstrated; ready to begin low rate initial production).			
Title: JSF Sensor Hardening	0.292	1.505	1.354
Description: Current F-35 Electro-Optical Targeting System (EOTS) and Electro-Optical Distributed Aperture System (EODAS) focal plane arrays (FPAs) are vulnerable to jamming and damage from enemy lasers. In addition, these FPAs are suffering manufacturing yield and cost issues. This effort will leverage prior and concurrent DoD investments to make manufacturing improvements that incorporate laser protection technology into the FPA's Read-Out Integrated Circuits (ROICs) while concurrently reducing ROIC defects and cost, and increasing size and yield. Program Outputs: This project will increase the maturity of laser-hardened ROICs to TRL 6 and will demonstrate the capability to produce a prototype in a production environment. The goal is to			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
transition laser-hardened FPAs in time for the F-35Block 5 Upgrade. Although focused on applications for JSF, these technologies are applicable to any Medium Wavelength Infrared detector, including those on tactical and reconnaissance sensor systems. ***FY 2010 Accomplishments:*** Awarded contracts September 2010. Initiated Manufacturing Readiness Assessment (MRA). ***FY 2011 Plans:*** Complete the initial MRA, increase wafer size, and reduce defects. ***FY 2012 Plans:*** Continue wafer size enhancements and defect reduction work. Initiate an FPA production scale-up effort.			
Title: Advanced RF Packaging ***Description:*** This effort will develop a low-cost, open-architecture radar solution for the Littoral Combat Ship (LCS) program. This program will reduce the cost of the current radar system by ~20% and fit into the existing TRS-3D top side and below decks available footprint. The open architecture configuration will allow upgrades for new technologies over the lifetime of the program as well as offer lower cost via open competition for the radar's building blocks. The results of this open architecture, reduced cost radar effort will be directly integrated back to the Army's EQ-36 Counter-fire Target Acquisition Radar for associated impact and cost savings. Finally, the plastic packaging effort as a part of this program will have a direct impact on the Volume Search Radar (VSR) on CVN-79 – creating an additional $1M/hull cost savings for the Navy. Manufacturing technology improvements will have a direct impact on the rate and quantity of this capability delivered to current operations. Program Outputs: This effort will provide the Navy with the first truly open architecture radar solution that will be able to accommodate different MMIC technologies, Line Replaceable Unit (LRU) technologies, processor, and power supplies from multiple vendors. It will provide the Army with significant cost savings due to the implementation of these advanced Monolithic Microwave Integrated Circuits and printed wire board manufacturing technologies. Estimated lifetime cost avoidance for the LCS and EQ-36 programs is estimated at $151M. ***FY 2010 Accomplishments:*** Awarded contract September 2010. Initiated an advanced packaging effort to address the low-cost packaging, both plastic and ceramic, of the High Power Amplifiers (HPAs) for the both the VSR module and the high power stage for the LCS Line Replaceable Unit (LRU). Both types of package technologies were developed to work on Printed Wiring Boards (PWBs). ***FY 2011 Plans:***	0.794	2.170	2.076

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	PROJECT P680: *Manufacturing Science and Technology Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Continue the advanced packaging effort. Yield performance of higher levels of integration for the LRU will also be evaluated. The second phase (run concurrently) will focus on the radar system development, concentrating on the radar's open architecture and low cost manufacturing and assembly processes. A development of low-cost antenna assembly and the repackaging of ruggedized commercial off the shelf electronics in standard Navy cabinets will be addressed. ***FY 2012 Plans:*** At the conclusion of the second phase, a land-based integration and test of the low-cost radar using the manufacturing technology developed from the first phase and the open architecture development from the second phase will be accomplished.			
Accomplishments/Planned Programs Subtotals	11.892	18.916	17.888

	FY 2010	FY 2011
Congressional Add: High Performance Manufacturing Technology Initiative	7.500	-
FY 2010 Accomplishments: Developed and demonstrated modeling and simulation tools that address the project goals. Promoted the increased use of such tools. Awarded new contracts in September 2010 for the following new projects: Prime Supplier Software, Improving Manufacturing Supply Chain Design and Resiliency, Customer/Supplier Interoperability During Collaborative Design.		
Congressional Add: California Enhanced Defense Small Manufacturing	1.600	-
FY 2010 Accomplishments: Reprogrammed to the Defense Logistics Agency		
Congressional Adds Subtotals	9.100	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• (BA3) 0603680F: *Air Force ManTech*	39.913									Continuing	Continuing
• (BA7) 0708045A: *Army ManTech*	68.466									Continuing	Continuing
• (BA7) 0708011N: *Navy ManTech*	56.691									Continuing	Continuing
• (BA7) 0708011S: *DLA ManTech*	20.514									Continuing	Continuing

D. Acquisition Strategy

Not applicable for this item. Outyear data for "Other Program Funding" is contained within the Service budgets.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603680D8Z: *Defense Wide Manufacturing Science and Technology Program*	**PROJECT** P680: *Manufacturing Science and Technology Program*

E. Performance Metrics

The majority of project performance metrics are specific to each effort and include measures identified in the project plans. The metrics include items such as target dates from project work break down schedules, production measures, production goals, production numbers and demonstration goals and dates. In addition, generic performance metrics applicable to the Manufacturing Science and Technology (MS&T) program includes attainment of previous administration goal, "Speed technology transition focused on warfighting needs". The metrics for this objective and the objective of MS&T is to transition 30% of completing demonstrations program per year. Due to the relatively new time frame of the MS&T program, transition rates for completed efforts for this new project are not available yet.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603699D8Z: *Emerging Capabilities Technology Development*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	-	-	26.972	-	26.972	32.298	32.493	31.521	29.404	Continuing	Continuing
P795: *Emerging Capabilities Technology Development*	-	-	26.972	-	26.972	32.298	32.493	31.521	29.404	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element is a new start in FY 2012 and reflects a transition from 0605799D8Z to 0603699D8Z in FY 2012.

This funding request supports the development of emerging capabilities under the Director of Defense Research & Engineering's (DDR&E) Rapid Reaction Technology Office (RRTO). These funds are used to advance technical capabilities in mutual areas of interest through focused partnerships and projects with other federal departments and agencies. In addition to supporting interagency cooperation, this PE incubates selected concepts and technologies of interest to joint warfighters and their interagency partners to provide mature options as capability needs emerge in and beyond the FYDP. This includes developing risk-reducing prototypes to demonstrate capabilities in response to joint warfighter and interagency partners' shared requirements; and informing the Joint Capabilities Integration & Development System (JCIDS) and acquisition system through technical demonstrations. Individual projects are developed and funded with interagency partners over a two to three year period – products are demonstrated and fielded in spirals within that project timeline – and generally do not include stand-alone studies. Funding for this PE permits support for four to five major projects per year. Typically, these projects support mid-term irregular warfare needs aligned with those of interagency partners, and often supports near term capability needs in support of the Department's Rapid Fielding efforts. This PE has evolved from exclusive support of force transformation activities to the activities described above, more closely aligned with departmental goals.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603699D8Z: *Emerging Capabilities Technology Development*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	26.972	-	26.972
Total Adjustments	-	-	26.972	-	26.972
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Funding realignment from PE 0605799D8Z	-	-	20.890	-	20.890
• DDR&E Baseline Review	-	-	7.156	-	7.156
• Defense Efficiency – Report, Studies, Boards and Commissions	-	-	-0.753	-	-0.753
• Economic Assumptions	-	-	-0.087	-	-0.087
• Defense Efficiency – Contractor Staff Support.	-	-	-0.234	-	-0.234

Change Summary Explanation

Funding realignment from PE 0605799D8Z. Funds were transferred into this account to more closely aligned with departmental goals.

DDR&E Baseline Review. DDR&E implemented a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions that resulted in an increase of $7.156M.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions and Contractor Staff support below the aggregate level reported in the previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603699D8Z: *Emerging Capabilities Technology Development*	PROJECT P795: *Emerging Capabilities Technology Development*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P795: *Emerging Capabilities Technology Development*	-	-	26.972	-	26.972	32.298	32.493	31.521	29.404	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element is a new start in FY 2012 and reflects the transition from Program Element (PE) 0605799D8Z to 0603699D8Z in FY2012.
This funding request supports the development of emerging capabilities under the Director of Defense Research & Engineering (DDR&E) Rapid Reaction Technology Office (RRTO). These funds are used to advance technical capabilities in mutual areas of interest through focused partnerships and projects with other federal departments and agencies. In addition to supporting interagency cooperation, this PE incubates selected concepts and technologies of interest to joint warfighters and their interagency partners to provide mature options as capability needs emerge in and beyond the FYDP. This includes developing risk-reducing prototypes to demonstrate capabilities in response to joint warfighter and interagency partners' shared requirements; and informing the Joint Capabilities Integration & Development System (JCIDS) and acquisition system through technical demonstrations. Individual projects are developed and funded with interagency partners over a two to three year period – products are demonstrated and fielded in spirals within that project timeline – and generally do not include stand-alone studies. Funding for this PE permits support for four to five major projects per year. Typically, these projects support mid-term irregular warfare needs aligned with those of interagency partners, and often supports near term capability needs in support of the Department's Rapid Fielding efforts. This PE has evolved from exclusive support of force transformation activities to the activities described above, more closely aligned with departmental goals.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Overwatch	-	-	5.123
Description: Overwatch is a capability development effort which seeks to leverage technology and new concepts to fill ground combat and interagency capability gaps. Notably, Overwatch will build on previous projects, including Project Wolf Pack, by continuing to maximize the utilization of capabilities and technologies developed and transitioned under past projects. Within this framework, Overwatch is the umbrella project containing multiple initiatives seeking to aggressively cultivate and leverage emerging technologies and concepts to counter the current and future challenges characteristic of the irregular warfare environment. Projects are oriented towards increasing war fighter effectiveness on the battlefield and/or the development/ enhancement of "whole of government" irregular warfare capability. Specifically, the capability development effort will focus on two lines of operation to guide the growth of timely, sustainable, and deployable solutions for identified and anticipated requirements inside the formal acquisition process. The first line of operation will involve examination of interagency capabilities by pursuing concept experimentation/validation, interoperability enhancements, and command and control development. The second line of operation will focus on ground, and ground combat, capabilities particularly command and control, force protection, situational awareness, and networked, cooperative engagement. The end-			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603699D8Z: *Emerging Capabilities Technology Development*	PROJECT P795: *Emerging Capabilities Technology Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
state for each line of operation will be practical solutions suitable for transition. These solutions include completed operational assessments, equipment prototypes, or validated concepts which can be used to inform and drive formal procurement processes and/or policy decisions. ***FY 2012 Plans:*** Project Overwatch will continue with six active subordinate projects: the Law Enforcement Capabilities Project, the Gunslinger Package for Advanced Convoy Security (GunPACS), a Humanitarian Assistance/Disaster Relief (HA/DR) capability development effort, the Building Effective States Institutions project, the Enhanced Mortar Targeting System (EMTS). Additionally, two additional projects- an Evolved Threat Study focusing on the future evolution of Hezbollah and a project identifying Security Sector Reform technology gaps will be initiated.			
Title: Marine Sytems: Stiletto ***Description:*** Stiletto was developed to provide the DoD with a dedicated operational Research and Development (R&D) maritime platform. Although the craft incorporates experimental naval architecture to explore the scalability of non-mechanical dynamic lift, carbon fiber construction, and high speed performance for military operations, it's the craft's electronic keel and associated craft characteristics (e.g., covered payload space, an Unmanned Aerial Vehicle (UAV) flight deck, shallow draft, and ability to easily integrate Command, Control, Communications, Computers, Intelligence (C4I) systems) that provides Stiletto her agile R&D capabilities. The electronic keel was designed to be flexible, modular and re-configurable to support near plug-and-play installation of C4I equipment used as part of experimentation. In addition to testing C4I equipment, Stiletto is ideally suited for operational experimentation and has tested unmanned systems, sensors, and coastal warfare concepts of operations for various commands and agencies. The Stiletto vessel is homeported in Norfolk, Virginia at the Combatant Craft Division of the Naval Surface Warfare Center (NSWC), Carderock. ***FY 2012 Plans:*** Stiletto will continue to serve as a maritime demonstration platform. The intent is to expand the number of opportunities for non-traditional businesses that traditionally do not work with DoD to utilize Stiletto as a low cost, accessible demonstration venue to enter the defense support realm. Priority will be given to demonstrations that directly assist an acquisition program. Specific focus for demonstrations will be on evaluating unmanned systems capabilities; sensors; launch and recovery; and human factors.	-	-	2.492
Title: Project Pelican ***Description:*** In conjunction with the NASA-Ames Research Center, the Department has undertaken an effort called "Project Pelican" which is a non-deployable technology demonstrator that integrates independent technologies into a single, rigid aeroshell	-	-	15.000

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603699D8Z: *Emerging Capabilities Technology Development*	PROJECT P795: *Emerging Capabilities Technology Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
variable buoyancy (RAVB) air vehicle. The Pelican RAVB will demonstrate the technical maturity of a scalable vertical takeoff and landing aircraft. Key technologies to be demonstrated include a buoyancy management system to enable ballast-independent operations, composite lightweight rigid external structure to reduce environmental restrictions, a responsive low-speed/hover control system with associated control algorithms, and a ground handling subsystem to enable operations on unimproved landing surfaces. The program objective is to mitigate long-term technical risk by integrating and demonstrating a suite of technologies with the potential to reduce operational constraints on future heavy-lift, buoyant-aircraft development programs. If successful, the Pelican prototype will enable the rapid development of a nascent class of air vehicle which will radically reduce the energy use per ton-mile of airlift operations, permit high-payload operations directly into and out of austere regions with little infrastructure, and enable long-endurance manned or unmanned air operations. RAVB aircraft appear to be potentially scalable to payloads of 500-1,000 tons (compared with payloads in the 125-ton range for the largest current US cargo aircraft). With cruise speeds of 80-100 knots, RAVB aircraft could surpass by several times the speed of fast sealift. With the potential to operate from land or water with very little infrastructure, RAVB aircraft may also drastically reduce the need for intermodal transportation as cargo moves from origin to point of need, with corresponding reduction in delivery times. Project Pelican will be conducted over a five-year period with the first three years consisting of vehicle design, analysis, and subsystem prototyping/testing. Year four will involve systems integration and construction with ground and flight testing being conducted in year five. ***FY 2012 Plans:*** The funding increase in FY 2012 is for the acceleration and technical risk reduction to the Pelican initiative. Specifically it will transition Pelican from its current technical demonstrator approach to a fieldable prototype system. The Pelican initiative is focused on providing significant improvements to inter and intra-theater lift and logistics capability. Additional plans for FY 2012 include completion of integrated subsystems and vehicle assembly followed by a Flight Readiness Review of the RAVB air vehicle prior to full hangar tethered flight testing.			
Title: Thunderstorm ***Description:*** A follow-on to RRTO's "Bluegrass" efforts, Thunderstorm will established an enduring multi-platform, multi-sensor Intelligence Surveillance and Reconnaissance (ISR) test bed using SOUTHCOM's Joint Interagency Task Force South (JIATF-	-	-	4.357

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603699D8Z: *Emerging Capabilities Technology Development*	PROJECT P795: *Emerging Capabilities Technology Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
S) as an operational venue to conduct operational experiments with next generation detection, cueing, monitoring, tracking, and handoff capabilities against asymmetric target sets. JIATF-S was chosen because the Irregular Warfare environment is similar to Iraq and Afghanistan (i.e., non-state actors, ad hoc networks, and an adaptive enemy), but is not as operationally stressing. The availability of operational intelligence architectures coupled with a true interagency, multi-national organizational construct make JIATF-S a realistic environment to vet capabilities prior to deployment to more stressing operational environments. In addition to providing relevant intelligence to support JIATF-South operations, Thunderstorm will also encourage greater cooperation with multi-agency/multinational partners, and identify improvements in ISR concepts of operations that can be exported for other Areas of Responsibility (AORs) to leverage. OSD will make Thunderstorm exercise data available to facilitate government and industry requirements and capabilities development. ***FY 2012 Plans:*** Thunderstorm spirals with interagency and Combatant Command (COCOM) partners will continue. The project will seek opportunities to utilize venues that are similar to current Irregular Warfare operations at the time of the exercise. The goal is to conduct two or three Thunderstorm exercise spirals.			
Accomplishments/Planned Programs Subtotals	-	-	26.972

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the specific project plans. In addition, project completions and success are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target dates, production measures, fielding dates, and demonstration goals and dates. Generic performance metrics applicable to Emerging Capabilities includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on warfighting needs" and the metrics for this objective is to transition 30% of completing demonstrations program per year.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603711D8Z: *Joint Robotics Program/Autonomous Systems*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	10.289	9.943	9.756	-	9.756	10.071	10.281	10.520	10.857	Continuing	Continuing
P710: *Joint Robotics Program/ Autonomous Systems*	10.289	9.943	9.756	-	9.756	10.071	10.281	10.520	10.857	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program supports the technology development activities of the Joint Ground Robotics Enterprise (JGRE) with a focus on the development of subsystems and components, and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in simulated environments. Projects deliver advanced technology with direct relevance to enhancing warfighters' capabilities that have been identified during operational assessments and field feedback of current unmanned systems. By exercising its oversight role through a Technology Advisory Board, O-6 Council and Senior Steering Group (Flag level), Joint Ground Robotics applies this program to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems.
The primary purpose of this program is to support efforts to overcome technology barriers in the thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Manipulation Technologies, Collaborative Operations, Interoperability, Man-portable Unmanned Ground Systems, and Technology Transition/Transformation. Development and integration of technologies within the thrust areas of unmanned ground system technologies will expedite technology transition from the laboratory to operational use. The technologies are generally at Technology Readiness Levels (TRL) of 3 or 4 with the intent to mature them through JGRE efforts to TRL 6.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	9.110	9.943	11.048	-	11.048
Current President's Budget	10.289	9.943	9.756	-	9.756
Total Adjustments	1.179	-	-1.292	-	-1.292
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.500	-			
• SBIR/STTR Transfer	-0.217	-			
• Other Program Adjustments	1.896	-	-	-	-
• Defense Efficiency - Report, Studies, Boards, and Commissions	-	-	-1.277	-	-1.277
• Economic Assumptions	-	-	-0.015	-	-0.015

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603711D8Z: *Joint Robotics Program/Autonomous Systems*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P710: *Joint Robotics Program/Autonomous Systems*		
Congressional Add: *Autonomous Control and Video Sensing for Robots*	0.800	-
Congressional Add: *Battle-Proven Packbot*	1.200	-
Congressional Add Subtotals for Project: P710	2.000	-
Congressional Add Totals for all Projects	2.000	-

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603711D8Z: *Joint Robotics Program/ Autonomous Systems*	PROJECT P710: *Joint Robotics Program/Autonomous Systems*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P710: *Joint Robotics Program/ Autonomous Systems*	10.289	9.943	9.756	-	9.756	10.071	10.281	10.520	10.857	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Joint Robotics Program/Autonomous Systems program supports the technology development activities of the Joint Ground Robotics Enterprise (JGRE) with a focus on the development of subsystems and components, and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in simulated environments. Projects deliver advanced technology with direct relevance to enhancing war fighters' capabilities that have been identified during operational assessments and field feedback of current unmanned systems. By exercising its oversight role through a Technology Advisory Board, O-6 Council and Senior Steering Group (Flag level), Joint Ground Robotics applies this program to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. The primary purpose of this program is to support efforts to overcome technology barriers in the thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Manipulation Technologies, Collaborative Operations, Interoperability, Man-portable Unmanned Ground Systems, and Technology Transition/Transformation. Development and integration of technologies within the thrust areas of unmanned ground system technologies will expedite technology transition from the laboratory to operational use. The technologies are generally at Technology Readiness Levels (TRL) of 3 or 4 with the intent to mature them through JGRE efforts to TRL 6.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Autonomous & Tactical Behaviors	2.289	2.945	1.930

Description: Development of vehicle onboard intelligence and tactical behaviors for greater autonomy. These technologies will increase the war fighters' ability to accomplish military tasks with greater effectiveness, while simultaneously reducing their risk to exposure and harm. Multiple projects for this area have been selected and are listed below.

FY 2010 Accomplishments:

- Speech Signature Based Biometric Security delivers the capability to enable voice activated user authentication and unauthorized user rejection to a modified PackBot and modified Talon Unmanned Ground Vehicle (UGV). This technology adds an additional layer of security in UGVs. The accomplishments for this project were: completed text dependent security research; completed algorithm research; developed software application programming interface; developed feature extraction for in-ear speech; developed text dependent security implementation; and developed/acquired a Universal Serial Bus (USB) soundcard.

- Long Range Vision for Obstacle Detection demonstrates the ability to reliably classify terrain out to 100m in both structured and unstructured outdoor terrain. Project will transition to PE 0603709D8Z as the TRL level matures. The accomplishments for this project were: began selection sensor solution, sensor processing algorithm development, early performance testing, and unmanned ground vehicle integration; and evaluated candidate sensor technologies.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603711D8Z: *Joint Robotics Program/ Autonomous Systems*	PROJECT P710: *Joint Robotics Program/Autonomous Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Adaptive Navigation Systems develops and demonstrates an advanced modular and adaptive inertial navigation system for small unmanned ground vehicles. The accomplishments for this project were: integrated magnetometer; integrated heuristics; developed coding for real-time execution onboard Heuristics-enhanced Dead-reckoning (HEDR) computer; developed add-on odometry; built HEDR system; and performed end-of-year 1 demonstration. - Collision Prediction Utilizing Traversability Models develop, demonstrate, and deliver one integrated sensor system that will detect, classify, track, and predict the motion of objects from a moving vehicle. The prototypes include sensors, computing, power distribution, and software to sense the environment. In addition to the prototype system, the government will deliver government use rights for the hardware and software, a well documented C++ API with associated libraries developed under this project, and other third party libraries and relevant source code. Project will transfer to PE 0603709D8Z as the TRL level matures. The accomplishments for this project were: completed requirements development; completed algorithm sensor and platform research and analysis; prepared software architecture design and documentation; and completed Critical Design Review 1. - Real Time Detection and Tracking of Objects from a Moving Vehicle improves overall reliability in terms of detection rate and a reduced false alarm rate and thus provides the ability of a UGV to safely and autonomously navigate in crowded environments and among people. The accomplishments for this project were: developed hardware and software running on a CPU-GPU processing unit that uses an open software interface. ***FY 2011 Plans:*** - On-Board Robot Shock Tube Dispenser will allow the warfighter to stage a counter charge on-board a Small Unmanned Ground Vehicle (SUGV) prior to proceeding down range and will eliminate the requirement to be tethered to the command post. This will provide greater maneuverability and reduce the operator's time on target, provide a more robust search of the target area, and reduce the amount of shock tube that must be transported. The plans for this project are: prepare documentation and requirements; develop prototype; and perform system level testing on-board a SUGV. ***FY 2012 Plans:*** Projects for this research area will be selected in July 2011.			
Title: Collaborative Operations ***Description:*** Integrate communication, mission planning, interface technologies, and advanced intelligence capabilities to support collaborative operations between manned and unmanned systems. Develop and assess several strategies to enhance tele-operation of current Unmanned Ground Vehicles (UGV) and collaborative Unmanned Air Vehicles (UAV) teams. Development of these technologies will enable unmanned systems to support War fighter concepts of operation that are envisioning unmaned	1.623	3.225	3.775

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603711D8Z: *Joint Robotics Program/ Autonomous Systems*	PROJECT P710: *Joint Robotics Program/Autonomous Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
systems working in collaboration across domains (air, ground, and maritime) to execute tactical missions and complex military tasks. Multiple projects for this area have been selected and are listed below. ***FY 2010 Accomplishments:*** - Counter Tunnel Exploitation develops and demonstrates a prototype robotic system for Counter Tunnel Exploitation, Mapping and Characterization. The Tunnel Exploitation and Reconnaissance Robotic Apparatus (TERRA) system will meet the technology gaps and needs for the counter tunnel mission. This mission is currently performed by CONUS Defense Support to Civil Authority missions supported by U.S. Northern Command (USNORTHCOM). The accomplishments for this project were: developed an umanned ground vehicle (UGV) mobility platform capable of insertion through a maximum 8 inch diameter bore hole; demonstrated & transitioned UGV mobility platform prototype; developed 1st generation sensor suite with 3D Simultaneous Localization and Mapping (SLAM) and modeling; Integrated a mobility platform and support apparatus into system; and completed 1st generation sensor suite and algorithms development. ***FY 2011 Plans:*** - Counter Tunnel Exploitation, Mapping, & Characterization will develop and demonstrate a prototype robotic system for Counter Tunnel Exploitation, Mapping and Characterization. The Tunnel Exploitation and Reconnaissance Robotic Apparatus (TERRA) system will meet the technology gaps and needs for the counter tunnel mission. Project transitions to PE 0604709D8Z as TRL level matures. The plans for this project are: complete mobility platform development; bore hole support apparatus prototype development; and begin 2nd generation sensor suite and algorithms development. ***FY 2012 Plans:*** Projects for this research area will be selected in July 2011.			
Title: Interoperability ***Description:*** Software algorithms and interface technologies will facilitate sharing of data across unmanned platforms and domains, and with C2 systems as well as interchangeability of mission payloads and unmanned chassis. Such interoperability will enable collaborative operations between manned and unmanned systems as well as among unmanned systems in differing domains. Multiple projects for this area have been selected and are listed below. ***FY 2010 Accomplishments:*** - Non-RF Comms for Small Unmanned Ground Vehicles (UGVs) design and develop a laser communication system for small UGVs to improve communications in CREW environments. The accomplishments for this project were: performed early system	1.350	1.947	2.225

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603711D8Z: *Joint Robotics Program/ Autonomous Systems*	PROJECT P710: *Joint Robotics Program/Autonomous Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
demonstrations; performed system analysis; completed software automation development; completed design and development; and completed design review. ***FY 2011 Plans:*** - Non-RF Comms for Small Unmanned Ground Vehicles (UGVs) will improve communications of the operator control unit and the robotic vehicle by developing a laser interrogator for a free-space optical communication systems for UGVs. The plans for this project are: fabricate, test, and demonstrate an interrogator; and demonstrate Non-RF Communications systems. * Real-time Radio Modeling for Robotics will fix issues associated with losses of data in sending tactical messages across the battlefield experienced by war fighters. The planned accomplishments for this project are: Begin modeling effort with different types of materials; Begin antenna modeling. ***FY 2012 Plans:*** - Real-time Radio Modeling for Robotics will fix issues associatied with losses of data in sending tactical messages across the battlefield experienced by warfighters. Project will transition to PE 0603709D8Z when TRL level matures. The plans for this project are: complete modeling effort with different types of materials and complete antenna modeling.			
Title: Man-Portable UGS Technologies ***Description:*** Increase war fighter capability by transferring and developing technologies of immediate impact on man-portable robotic systems - e.g., obstacle detection/obstacle avoidance (ODOA) and collaborative behaviors for small vehicles. Certain missions and mission environments (urban, unimproved surface, mountainous, subterranean) require the use of man-portable robots in support of dismounted operations. Technologies that can be scaled to low size, weight, space, and power density will enable robotic solutions to capability needs in dismounted operation areas and challenging environments. Currently no projects for this reasearch have been selected. ***FY 2010 Accomplishments:*** No projects are addressing this research area at this time. ***FY 2011 Plans:*** No projects are addressing this research area at this time. ***FY 2012 Plans:*** Projects for this research area will be selected in July 2011.	-	-	-
Title: Manipulation Technologies	1.747	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603711D8Z: *Joint Robotics Program/ Autonomous Systems*	PROJECT P710: *Joint Robotics Program/Autonomous Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Incorporate existing technologies, enable greater range of robotic manipulation, support the develppment of mobile manipulation, and improve manipulator performance. Development of these technologies will enable unmanned systems to conduct highly dexterous tasks that today are accomplished manually and currently place war fighters in extremely vulnerable and dangerous situations. One project for this area has been selected and is listed below. ***FY 2010 Accomplishments:*** - Highly Dexterous Manipulator for EOD Operators develops a Manipulator that approaches the dexterity of a human and is targeted for use on a small EOD UGV with a total vehicle weight (including the manipulator) of 164 pounds. The manipulator is capable of performing bimanual tasks as required in the Capability Development Document (CDD) for Advanced Explosive Ordnance Disposal Robotic System (AEODRS). The direct benefit to the war fighter is increased performance and capability over the current state-of-the-art which will translate into reduced mission time. The accomplishments for this project were: began development of dexterous heavy lift hardware; began tesing of feed-forward controls; began Human Machine Interface (HMI) Phase I.			
Title: Technology Transition/Transformation ***Description:*** Facilitate integration of technologies to ongoing programs: exploit best features of past and ongoing efforts, e.g., interface technologies (Human Robot Interaction) and autonomous operations. Robotics technologies are being matured with the express intent of transitioning them out of the laboratory to either development programs of record, licensing to industry to foster COTS solutions, or integration into fielded systems. Two projects for this area have been selected and are listed below. ***FY 2010 Accomplishments:*** - Range Clearance Competition reduces the cost of range clearance, shortens the time required to clear the ranges, and takes people out of harm's way by moving from a manual process to a semi-autonomous robotic process. The accomplishments for this project were: developed rules for the competition. ***FY 2011 Plans:*** - Range Clearance Competition reduces the cost of range clearance, shortens the time required to clear the ranges, and takes people out of harm's way by moving from a manual process to a semi-autonomous robotic process. The plans for this project are: conduct competition pilot; conduct competitor in-process reviews; and hold competition. - Tip-over Prevention Behaviors will develop an autonomous controller with the stability feedback necessary to avoid a tip-over event. This will allow navigation of complex areas and larger payloads to be accomplished with prior stability behavior measures and changes to be made based on the data received. The plans for this project are: investigate, characterize, and adapt existing	1.280	1.826	1.826

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
algorithms; implement operator alert for teleoperated robots nearing tip-over conditions; selection and integration of hardware; prediction & algorithm evaluation; and integration of IMU and GPS into the robot. ***FY 2012 Plans:*** - Tip-over Prevention Behaviors project will continue. The planned accomplishments for this project are: develop reactive behaviors; begin definition of Robotics Standards Harmonization (JAUS) registration messages; demonstrate real time algorith on robots; demonstrate operator warning of potential tip overs; and demonstrate real time behavior on steep slopes.			
Accomplishments/Planned Programs Subtotals	8.289	9.943	9.756

	FY 2010	FY 2011
Congressional Add: Autonomous Control and Video Sensing for Robots ***FY 2010 Accomplishments:*** The project will demonstrate an open architecture adaptive digital video system for unmanned ground vehicles. The deliverables will include a reference architecture design and a physical demonstration of the proposed system. The system will include either modified COTS or custom digital cameras and video compression hardware adapted to utilize the SAE AS4 standard interface. The system will also demonstrate the ability to automatically vary the video bandwidth settings to adapt to real-time changes in the bandwidth available from the wireless networked radios.	0.800	-
Congressional Add: Battle-Proven Packbot ***FY 2010 Accomplishments:*** The project will research an in-situ charging capability for the Packbot and various enhanced communication methods, to include longer range and operation in complex indoor environments. Prototypes implementing both capabilities will be produced.	1.200	-
Congressional Adds Subtotals	2.000	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• (BA4) PE 0603709D8Z : *Joint Robotics Program*	15.072	9.878	9.710		9.710	12.206	11.509	11.169	12.990	Continuing	Continuing
	5.013	4.155	3.126		3.126	2.986	3.028	3.157	4.575	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603711D8Z: *Joint Robotics Program/ Autonomous Systems*	PROJECT P710: *Joint Robotics Program/Autonomous Systems*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• (BA5) PE 0604709D8Z : *Joint Robotics Program*											

D. Acquisition Strategy

N/A

E. Performance Metrics

1. Technologies to be funded & developed are reviewed by Capabilitiy Area focused working groups to determine progress, transition plans, and relevance of each project.
2. Project plans are submitted, evaluated and analyzed by the Joint Robotics Ground Enterprises management and technical staff for risk and progress.
3. Project progress toward goals and milestones is assessed during mid-year and end-of-year reviews.
4. Technologies developed by the Joint Robotics Ground Enterprises (JGRE) are tracked and documented using the DOD Technology Readiness Level (TRL) scale for developing TRL 3 or 4 technologies to TRL 6 and adhering to the integrated baselines with regard to cost and schedule.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603716D8Z: *Strategic Environmental Research and Development Program (SERDP)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	62.251	68.021	66.409	-	66.409	67.119	68.412	69.868	71.938	Continuing	Continuing
P470: *Strategic Environmental Research and Development Program (SERDP)*	62.251	68.021	66.409	-	66.409	67.119	68.412	69.868	71.938	Continuing	Continuing

A. Mission Description and Budget Item Justification

Congress established the Strategic Environmental Research and Development Program (SERDP) in 1990 (10 U.S.C. Section 2901-2904) to address Department of Defense (DoD) and Department of Energy (DOE) environmental concerns. It is conducted as a DoD program, jointly planned and executed by the DoD, DOE, and the Environmental Protection Agency (EPA), with strong participation by other Federal agencies, industry, and academia. SERDP`s objective is to improve DoD mission readiness and environmental performance by providing new scientific knowledge and cost-effective technologies in the areas of Environmental Restoration, Munitions Response, Resource Conservation and Climate Change, and Weapons Systems and Platforms. SERDP does this by addressing high priority DoD environmental technology requirements. SERDP enhances military operations, improves military systems` effectiveness, enhances military training/readiness, sustains DoD's training and test ranges and installation infrastructure, and helps ensure the safety and welfare of military personnel and their dependents by eliminating or reducing the generation of pollution and use of hazardous materials and reducing the cost of remedial actions and compliance with environmental laws and regulations. As a secondary benefit, SERDP helps solve significant national and international environmental problems. The keys to a growing list of SERDP technological successes are the ability to respond aggressively and proactively to priority defense environmental needs; the pursuit of world-class technical excellence; and an emphasis on constant technology transfer.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603716D8Z: *Strategic Environmental Research and Development Program (SERDP)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	69.175	68.021	68.695	-	68.695
Current President's Budget	62.251	68.021	66.409	-	66.409
Total Adjustments	-6.924	-	-2.286	-	-2.286
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-3.199	-			
• SBIR/STTR Transfer	-1.576	-			
• Congressional Directed Reduction	-1.500	-	-	-	-
• Other Program Adjustments	-0.649	-	-	-	-
• Defense Efficiency - Report, Studies, Boards and Commissions	-	-	-1.725	-	-1.725
• Defense Efficiency - Contractor Suppport Staff	-	-	-0.468	-	-0.468
• Economic Assumptions	-	-	-0.093	-	-0.093

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603716D8Z: *Strategic Environmental Research and Development Program (SERDP)*	PROJECT P470: *Strategic Environmental Research and Development Program (SERDP)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P470: *Strategic Environmental Research and Development Program (SERDP)*	62.251	68.021	66.409	-	66.409	67.119	68.412	69.868	71.938	Continuing	Continuing

A. Mission Description and Budget Item Justification

Congress established the Strategic Environmental Research and Development Program (SERDP) in 1990 (10 U.S.C. Section 2901-2904) to address Department of Defense (DoD) and Department of Energy (DOE) environmental concerns. It is conducted as a DoD program, jointly planned and executed by the DoD, DOE, and the Environmental Protection Agency (EPA), with strong participation by other Federal agencies, industry, and academia. SERDP`s objective is to improve DoD mission readiness and environmental performance by providing new scientific knowledge and cost-effective technologies in the areas of Environmental Restoration, Munitions Response, Resource Conservation and Climate Change, and Weapons Systems and Platforms. SERDP does this by addressing high priority DoD environmental technology requirements. SERDP enhances military operations, improves military systems` effectiveness, enhances military training/readiness, sustains DoD's training and test ranges and installation infrastructure, and helps ensure the safety and welfare of military personnel and their dependents by eliminating or reducing the generation of pollution and use of hazardous materials and reducing the cost of remedial actions and compliance with environmental laws and regulations. As a secondary benefit, SERDP helps solve significant national and international environmental problems. The keys to a growing list of SERDP technological successes are the ability to respond aggressively and proactively to priority defense environmental needs; the pursuit of world-class technical excellence; and an emphasis on constant technology transfer.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Environmental Restoration	19.052	20.443	18.067
Description: Environmental Restoration (ER) reduces DoD's liabilities by developing technologies for the cost-effective detection, characterization, containment, and remediation of contamination in soil, sediments, and water. ***FY 2010 Accomplishments:*** Science and technology advancements were made to address DoD's emerging groundwater issues, sediment contamination, sustainment of test and training ranges, managing persistent DoD contamination, and improve the monitoring and optimization of DoD remediation efforts. SERDP continued to improve scientific understanding and develop innovative cost effective methods in support of DoD's remediation efforts and the sustainment of DoD ranges. A significant accomplishment was the increased understanding of the degradation of vinyl chloride in groundwater and the determination that degradation can occur under microaerophilic conditions. This knowledge will be key to developing more effective remediation strategies for DoD sites contaminated with chlorinated solvents. New initiatives begun in FY 2010 addressed innovative risk assessment approaches for military unique compounds, the options and limitations for treatment of persistent contaminated groundwater plumes, and			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603716D8Z: *Strategic Environmental Research and Development Program (SERDP)*	PROJECT P470: *Strategic Environmental Research and Development Program (SERDP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
bioavailability of contamination found on DoD ranges and sediments. A description of all new FY 2010 ER projects can be found at www.serdp-estcp.org. ***FY 2011 Plans:*** New research initiatives will focus on assessing the environmental impacts of munitions compounds in the marine environment, in situ remediation of perfluoroalkyl contaminated groundwater, improving the understanding of impacts to groundwater quality post-remediation, and improved assessments of munitions constituent source terms on operational ranges. New FY 2011 ER selected projects briefed the Scientific Advisory Board in September and October 2010 and are now underway. Details will be available at www.serdp-estcp.org. ***FY 2012 Plans:*** New research initiatives will focus on the highest priority DoD requirements to reduce DoD's liabilities by developing technologies for the cost-effective detection, characterization, containment, and remediation of contamination in soil, sediments, and water. Specific Statements of Need were released in October 2010 and will address the development of sustainable wastewater treatment processes for forward operating bases and assessing the environmental fate and impacts of insensitive munitions compounds. Details are available at www.serdp-estcp.org.			
Title: Munitions Response (MR) ***Description:*** Munitions Response (MR) develops detection, discrimination, and remediation technologies for Unexploded Ordnance (UXO) to address the significant DoD liability in the Military Munitions Response Program. Investments are also made to improve active range clearance and reduced generation of UXO during live fire testing and training operations. ***FY 2010 Accomplishments:*** Investments in Munitions Response yielded new technologies to address the difficult and persistent issues faced by the Military Munitions Response Program. Technology advancements continued in the areas of ground based detection and discrimination, wide area assessment, detection of underwater UXO, and advanced planning and assessment tools. Investigators continued to use the two standardized test sites for the evaluation of UXO detection technologies and continued efforts to improve sensor designs and improve detection and discrimination methods. A major accomplishment was developing robust statistical processing techniques to achieve high-fidelity discrimination and classification of UXO using ordinary EM61 field data. New initiatives begun in FY 2010 continued to focus on advanced sensors, signal processing, supporting technologies and protocols. In addition, projects were funded to analyze data obtained from recent live site discrimination tests to improve current algorithms and develop new discrimination approaches. A description of all new FY 2010 MR projects can be found at www.serdp-estcp.org. ***FY 2011 Plans:***	9.526	8.562	8.496

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603716D8Z: *Strategic Environmental Research and Development Program (SERDP)*	PROJECT P470: *Strategic Environmental Research and Development Program (SERDP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
New research initiatives will focus on advancements in underwater UXO detection and discrimination, advanced sensors, signal processing, supporting technologies, and protocols to support informed decisions and reduce the costs associated with detecting and remediating UXO. New FY 2011 MR selected projects briefed the Scientific Advisory Board in September and October 2010 and are now underway. Details will be available at www.serdp-estcp.org. ***FY 2012 Plans:*** New research initiatives will focus on the highest priority DoD requirements in underwater UXO detection and discrimination, advanced sensors, signal processing, supporting technologies, and protocols to reduce the costs associated with detecting and remediating UXO on land and underwater. Specific Statements of Need were released in October 2010. Details are available at www.serdp-estcp.org.			
Title: Resource Conservation and Climate Change (RC) ***Description:*** Resource Conservation and Climate Change (RC) develops the science and technologies required to sustain training and testing ranges. ***FY 2010 Accomplishments:*** Science and technology advancements were made to improve DoD's ecosystem based management, protection of threatened and endangered species and marine mammals, management of cultural resources on DoD lands, and protection of watersheds to sustain military test and training lands. SERDP continued efforts to address persistent issues that severely impact installation readiness and the ability to support training and testing. A major accomplishment was the development of a modeling tool that can be used by DoD installation managers to manage land use and habitats in a way that improves both mission sustainability and conservation planning. New initiatives begun in FY 2010 are assessing the impact of climate change on military lands in the southwest and improve our understanding and develop tools to manage the generation of dust due to military activities on our ranges. A description of all new FY 2010 RC projects can be found at www.serdp-estcp.org ***FY 2011 Plans:*** New research initiatives will assess the impacts of climate change on Alaskan ecological systems; improve the understanding of the behavioral ecology of cetaceans; develop fundamental and applied science required to manage and restore forested ecosystems on Department of Defense (DoD) lands; and improve our understanding of source-sink dynamics for populations of species of relevance to DoD resource managers. New FY 2011 RC selected projects briefed the Scientific Advisory Board in September and October 2010 and are now underway. Details will be available at www.serdp-estcp.org. ***FY 2012 Plans:*** New research initiatives will focus on the highest priority DoD requirements to develop the science and technologies required to sustain training and testing ranges and respond to requirements in the 2010 QDR, including the assessment of climate change	18.575	21.893	22.735

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603716D8Z: *Strategic Environmental Research and Development Program (SERDP)*	PROJECT P470: *Strategic Environmental Research and Development Program (SERDP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
impacts to DoD installations. Specific Statements of Need were released in October 2010. Details are available at www.serdp-estcp.org.			
Title: Weapons Systems and Platforms (WP)	15.098	17.123	17.111
Description: WP develops technologies and materials that reduce the waste and emissions associated with the manufacturing, maintenance, and use of DoD weapons systems and platforms to reduce future environmental liabilities and their associated costs and impacts. ***FY 2010 Accomplishments:*** The Weapons Systems and Platforms program continued to focus on development of 'green' energetics, munitions, and weapons systems components as well as innovative life-cycle-based coating systems for military aircraft and land based platforms that eliminates volatile organic compounds, heavy metal constituents, and associated hazardous air pollutants. A significant accomplishment was the development of an environmentally friendly medium caliber gun barrel liner. The process developed by a SERDP-funded effort used explosive bonding to deposit a tantalum liner along the entire length of a medium caliber gun barrel. In addition to the benefits of eliminating hazardous hexavalent chromium, the tantalum lined barrel has shown a significant increase in performance compared to a chromium plated control barrel in preliminary firing tests. Another major accomplishment was the development of an Advanced Acoustic Model. This model is a significant advancement over current noise models in that it provides a 3-dimensional simulation modeling capability for new jet aircraft that can accommodate the unique sound propagation features of advanced jet engines. New efforts begun in FY 2010 included developing alternatives to perchlorate for missile systems, new military cleaners and paint stripping techniques, sustainable materials and processes for military composites, and a scientific understanding of the impacts of lead free electronics in military hardware. A description of all new FY 2010 WP projects can be found at www.serdp-estcp.org ***FY 2011 Plans:*** New initiatives include the development of alternatives to copper- and aluminum-beryllium alloys for military applications; environmentally benign, insensitive, castable, high-performance, minimum-smoke rocket propellants; understanding the corrosion protection requirements for adhesive bond primers; combustion science to predict emissions from military platforms burning alternative fuels; and environmentally benign removal process for low observable weapons systems. New FY 2011 WP selected projects briefed the Scientific Advisory Board in September and October 2010 and are now underway. Details will be available at www.serdp-estcp.org. ***FY 2012 Plans:*** New research initiatives will focus on the highest priority DoD requirements to develop technologies and materials that reduce the waste and emissions associated with the manufacturing, maintenance, and use of DoD weapons systems and platforms			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603716D8Z: *Strategic Environmental Research and Development Program (SERDP)*	PROJECT P470: *Strategic Environmental Research and Development Program (SERDP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
to reduce future environmental liabilities and their associated costs and impacts. Specific Statements of Need were released in October 2010 and include development of chemical agent resistant powder topcoats; scale-up and formulation of green insensitive secondary explosives; waste-to-energy converters for overseas contingency operations; and assessing the reliability of tin-whisker-mitigating conformal coatings. Details are available at www.serdp-estcp.org.			
Accomplishments/Planned Programs Subtotals	62.251	68.021	66.409

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance in this program is monitored at two levels. At the lowest level, each of the more than 160 individual projects is measured against both technical and financial milestones on a quarterly and annual basis. At a program-wide level, progress is measured against DoD's environmental requirements and the development of technologies that address these requirements as well as the transition of these technologies to either to demonstration and validation programs or to direct use in the field.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603727D8Z: *Joint Warfighting Program*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	10.738	10.966	10.547	-	10.547	10.583	10.791	11.026	11.360	Continuing	Continuing
P727: *Joint Warfighting*	10.738	10.966	10.547	-	10.547	10.583	10.791	11.026	11.360	Continuing	Continuing

A. Mission Description and Budget Item Justification

The OSD Joint Warfighting Program (JWP) account supports two related activities supporting development of the Department's joint warfighting capabilities.

The Joint Advanced Warfighting Program (JAWP) segment assesses joint operations and geo-socio-political environments pertinent to joint operations enabling Defense officials to understand capability gaps and identify potential solutions. The findings of these investigative analyses frequently explore joint capability development via experiments and prototype demonstrations. The JAWP serves an essential, expert, and independent feedback role in identifying, exploring and evaluating breakthrough war fighting capabilities. JAWP resources underwrite a small dedicated staff of civilian analysts (currently hosted by the Institute for Defense Analysis - IDA) paired with a military staff of field-grade military operations researchers. A Board of Directors (JAWP BoD) exerts topic selection and oversight of JAWP activities. The BOD includes senior representatives from DDR&E (Joint Operations Support), Office of the Under Secretary of Defense (Policy) and the Joint Staff. JAWP analyses serve as a basis for formulation and assessment of advanced concepts and capabilities, identifying enabling technologies and operational integration options for the Department. Resultant concepts drive changes in the doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) of the Services and Combatant Commanders (COCOMs).

The balance of JWP resources are dedicated to supporting joint commands with analytic resources to translate capability gap assessments into actionable military needs statements, identification of candidate solutions via experimentation, translation of solution concepts into field demonstrations, and remedy of joint capability gaps in partnership with Defense agents for doctrine changes and technology development. JWP resources dedicated to direct support joint commands provides analytic expertise not normally allocated via formal staffing billets. In this activity, JWP underwrites small grants to invigorate employment of experimentation and analysis, to formulate strategies to resolve joint capability gaps, and to stimulate participation in the Department enterprises for joint experimentation and joint capability development.

Director, Defense Research and Engineering (DDR&E) exercises oversight of JWP resources.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603727D8Z: *Joint Warfighting Program*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	11.135	10.966	11.074	-	11.074
Current President's Budget	10.738	10.966	10.547	-	10.547
Total Adjustments	-0.397	-	-0.527	-	-0.527
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.290	-			
• Other Program Adjustments	-0.107	-	-	-	-
• Defense Efficiency - Report, Studies, Board and Commissions	-	-	-0.278	-	-0.278
• Defense Efficiency - Contractor Staff Support	-	-	-0.234	-	-0.234
• Economic Assumptions	-	-	-0.015	-	-0.015

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603727D8Z: *Joint Warfighting Program*	PROJECT P727: *Joint Warfighting*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P727: *Joint Warfighting*	10.738	10.966	10.547	-	10.547	10.583	10.791	11.026	11.360	Continuing	Continuing

A. Mission Description and Budget Item Justification

The OSD Joint Warfighting Program (JWP) account supports two related activities supporting development of the Department's joint warfighting capabilities.

The Joint Advanced Warfighting Program (JAWP) segment assesses joint operations and geo-socio-political environments pertinent to joint operations enabling Defense officials to understand capability gaps and identify potential solutions. The findings of these investigative analyses frequently explore joint capability development via experiments and prototype demonstrations. The JAWP serves an essential, expert, and independent feedback role in identifying, exploring and evaluating breakthrough war fighting capabilities. JAWP resources underwrite a small dedicated staff of civilian analysts (currently hosted by the Institute for Defense Analysis - IDA) paired with a military staff of field-grade military operations researchers. A Board of Directors (JAWP BoD) exerts topic selection and oversight of JAWP activities. The BOD includes senior representatives from DDR&E (Joint Operations Support), Office of the Under Secretary of Defense (Policy) and the Joint Staff. JAWP analyses serve as a basis for formulation and assessment of advanced concepts and capabilities, identifying enabling technologies and operational integration options for the Department. Resultant concepts drive changes in the doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) of the Services and Combatant Commanders (COCOMs).

The balance of JWP resources are dedicated to supporting joint commands with analytic resources to translate capability gap assessments into actionable military needs statements, identification of candidate solutions via experimentation, translation of solution concepts into field demonstrations, and remedy of joint capability gaps in partnership with Defense agents for doctrine changes and technology development. JWP resources dedicated to direct support joint commands provides analytic expertise not normally allocated via formal staffing billets. In this activity, JWP underwrites small grants to invigorate employment of experimentation and analysis, to formulate strategies to resolve joint capability gaps, and to stimulate participation in the Department enterprises for joint experimentation and joint capability development.

Director, Defense Research and Engineering (DDR&E) exercises oversight of JWP resources.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Support for Combatant Command Innovation Cells	5.128	5.866	5.447
Description: JWP supports COCOMs by promoting the use of joint experimentation to address challenges specific to their theater or functional missions. It aims to reinvigorate COCOM staff capabilities to employ rigorous analysis and experimentation methodologies in support of specific mission assignments. It allows COCOM staffs to identify capability gaps and explore potential solutions "trial and error" limited objective experiments experiment to understand a concept or technology that addresses a specific COCOM challenge.			
FY 2010 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603727D8Z: *Joint Warfighting Program*	PROJECT P727: *Joint Warfighting*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Output - Provided resources to COCOMs to enable experimentation cells to employ joint experimentation that identifies and addresses regional capability gaps, explores potential solutions, and improves understanding of new technologies and concepts. Empowered the COCOM staffs to employ rigorous analysis and experimentation methodologies in support of their specific mission assignments, to critically assess their own needs and to examine viable capability gap solutions. Focus areas for COCOM limited objective experiments and participation: • Cyberspace/ Missile Defense/Combating Weapons of Mass Destruction(USSTRATCOM); • Joint Integrated Persistence Surveillance (USCENTCOM); • Direct Heavy Lift and Cooperative Security Engagement (USEUCOM); • Cooperative Security Engagement and Building Partnerships (USSOUTHCOM); • Command and Control in Homeland Defense and support to civil authorities (USNORTHCOM); • Building partnerships/ Command and Control in Irregular Warfare operations (USSOCOM); • Global Mobility (USTRANSCOM) ***FY 2011 Plans:*** FY11 Planned Output -Continue to provide resources to COCOMs to enable experimentation cells to employ joint experimentation that identifies and addresses regional capability gaps, explores potential solutions, and improves understanding of new technologies and concepts. Empower the COCOM staffs to employ rigorous analysis and experimentation methodologies in support of their specific mission assignments, to assess their own needs critically and to examine viable capability gap solutions. ***FY 2012 Plans:*** FY12 Planned Output -Continue to provide resources to COCOMs to enable experimentation cells to employ joint experimentation that identifies and addresses regional capability gaps, explores potential solutions, and improves understanding of new technologies and concepts. Empower the COCOM staff s to employ rigorous analysis and experimentation methodologies in support of their specific mission assignments, to assess their own needs critically and to examine viable capability gap solutions.			
Title: Joint Advanced Warfighting Program (JAWP) ***Description:*** JAWP serves as a focus factor and catalyst for innovation and change. This effort focuses on formulation and assessment of advanced concepts and capabilities, plus identifying enabling technologies and integration options for the Department. Annual JAWP activities are reviewed and approved by a Board of Directors including Joint Staff, OUSD-Policy and USD AT&L representatives ***FY 2010 Accomplishments:***	5.610	5.100	5.100

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603727D8Z: *Joint Warfighting Program*	PROJECT P727: *Joint Warfighting*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Output - The JAWP supported a full spectrum of transformation objectives addressing irregular, catastrophic, and disruptive challenges. It will design, conduct, and support joint experimentation, joint concept development, and analysis of joint operations, with the intent to inform and effect resource allocation and acquisition. It will continue efforts to align department processes in ways that make them more responsive to the needs of COCOMs and their subordinate forces and coalition partners. Results included: • Analysis of Campaign Support Plans that provided recommendations for the Guidance Employment of the Force (GEF); • Analysis of the effectiveness of CERP and USAID programs in reducing violence; • Analysis of competitive CONOPs that influenced the development of DoD's Analytical Agenda; • Support to ongoing operations with reach back to analysis centers in support of USCENTCOM; • Analysis of command and control during times of degraded and denied GPS in support of USPACOM; • Analysis of redundancies and opportunities for efficiencies in logistics and command and control nodes in Afghanistan. ***FY 2011 Plans:*** TFY 11 Planned Output- The JAWP will continue support of full spectrum transformation objectives addressing irregular, catastrophic, and disruptive challenges. It will design, conduct, and support joint experimentation, joint concept development, and analysis of joint operations, with the intent to inform and effect resource allocation and acquisition. It will continue efforts to align department processes in ways that make them more responsive to the needs of COCOMs and their subordinate forces and coalition partners. Specific projects include • Development of alternative concepts for inclusion in the Department of Defense Analytical Agenda; • Development of a counter threat finance strategy to support USNORTHCOM; • Identification of strategic lessons learned in operations with the interagency partners in Operation Unified Response; • Assessment of current COCOM tools for campaign planning. ***FY 2012 Plans:*** FY12 Planned Output- The JAWP will continue support of full spectrum transformation objectives addressing irregular, catastrophic, and disruptive challenges. It will design, conduct, and support joint experimentation, joint concept development, and analysis of joint operations, with the intent to inform and effect resource allocation and acquisition. It will continue efforts to align department processes in ways that make them more responsive to the needs of COCOMs and their subordinate forces and coalition partners.			
Accomplishments/Planned Programs Subtotals	10.738	10.966	10.547

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603727D8Z: *Joint Warfighting Program*	**PROJECT** P727: *Joint Warfighting*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance of Joint Experimentation systems is measured through metrics including (1) objective validation of enhanced COCOM capabilities to perform joint missions in their assigned theaters and areas of responsibility, (2) documented delivery effective joint operational concepts, (3) confirmed production of refined and validated capability descriptions.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603745D8Z: *Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	4.676	-	-	-	-	-	-	-	-	Continuing	Continuing
P745: *Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)*	4.676	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Synthetic Aperture Radar (SAR) Coherent Change Detection (CCD) Initiative encompassed four phases to develop deployable systems capable of achieving SAR with real time CCD for tactical intelligence. Phase one, completed in FY 2008, validated the utility of existing small SAR sensors for use as a CCD platform. CCD post processing was used to establish current SAR capabilities for change detection thresholds. Phase Two, completed in FY 2009, demonstrated real-time CCD on a manned, SAR-equipped, platform. This real time enhancement is capable of being retro fitted on existing manned SAR platforms. Phase Three developed the engineering enhancements necessary to integrate a real time SAR CCD capability on a small Unmanned Aerial Vehicle (UAV). All necessary software was developed during Phase Three. Phase Four (FY 2010 / FY 2011) extended the capability to an affordable small unmanned aircraft with a miniaturized SAR system. In FY 2011, the project will successfully meet its goal to develop a deployable system with a SAR sensor capable of achieving near real time CCD on a small UAV to be operated by the tactical commander and at a cost of $500,000 per SAR CCD sensor package.

FY 2010 represents the last year of funding for this project. Because FY 2010 funds continue to produce results in FY 2011, this program is considered effectively completed in FY 2011. Under Army G2 sponsorship, SAR CCD is being operationally deployed.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	4.825	-	-	-	-
Current President's Budget	4.676	-	-	-	-
Total Adjustments	-0.149	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.142	-			
• Other Program Adjustments	-0.007	-	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603745D8Z: *Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)*

Change Summary Explanation

FY 2010 represents the last year of funding for this project. Because FY 2010 funds continue to produce results in FY 2011, this program is considered effectively completed in FY 2011. Under Army G2 sponsorship, SAR CCD is being operationally deployed.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603745D8Z: *Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)*	PROJECT P745: *Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P745: *Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)*	4.676	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Synthetic Aperture Radar (SAR) Coherent Change Detection (CCD) Initiative encompassed four phases to develop deployable systems capable of SAR with real time CCD processing to provide over the horizon alerts for terrain changes above a given threshold. The focus is on increasing the situational awareness of small dispersed units operating in large areas.

Phase One (FY2008) validated the performance of existing lightweight SAR systems using CCD for detecting a variety of human activities through rigorous testing.

Phase Two (FY2009) demonstrated near real-time CCD on a manned SAR-equipped platform. Results were used to determine functional requirements and develop a system concept of operations (CONOPS).

Phase Three (FY2009) developed the engineering enhancements necessary to integrate a real time SAR CCD capability on a small Unmanned Aerial Vehicle (UAV). All necessary software was developed during this phase.

Phase Four (FY 2010 / FY 2011) extended the capability to an affordable small unmanned aircraft with a miniaturized SAR system. Phase Four decreased procurement costs of a small SAR with a real time CCD capability to $500,000 per sensor package. This compares to a current cost of approximately $1.2 million for a spot SAR system.

Upon the conclusion of the project, SAR CCD was incorporated via the Leonardo radar into the Shadow 200 (UAV) Program of Record . The US Army has adopted the CCD capability for use on the STARTLite radar which is used on the Grey Eagle (US Army Predator varient). The project also demonstrated a ground based processing capability that could be used for other radars beyond the STARTLite and ImSAR systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Extend miniaturized SAR system capability to an affordable UAV	4.676	-	-
Description: Phase Four accomplished the following: - A robust CONOPS - A front-end software package with a rich user experience			
FY 2010 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603745D8Z: *Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)*	PROJECT P745: *Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Phase Four of the Synthetic Aperture Radar (SAR) Coherent Change Detection (CCD) initiative successfully extended the SAR capability to an affordable small Unmanned Aerial Vehicle (UAV) with a miniaturized system. FY 2010 funds will continue to produce additional Phase Four results in FY 2011. Deliverables in FY 2011 will include decreasing procurement costs of a small SAR with a real time CCD capability to $500,000 per sensor package. Additionally, the near real-time SAR CCD capability will be integrated onto a tactical sized UAV with a sensor package cost of not more than $500,000. All funding required to complete the project was provided in FY 2010. No further funding will be provided for this project in FY 2011.			
Accomplishments/Planned Programs Subtotals	4.676	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

This project developed a deployable system with a SAR sensor capable of achieving real time CCD on a small UAV tested by the tactical commander and at a cost of $500,000 per SAR CCD sensor package.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603755D8Z: *High Performance Computing Modernization Program*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	231.735	200.986	-	-	-	-	-	-	-	Continuing	Continuing
P507: *High Performance Computing Modernization Program*	231.735	200.986	-	-	-	-	-	-	-	Continuing	Continuing

Note

The High Performance Computing Modernization Program transfers from the Office Secretary of Defense to the Department of the Army in FY2012.

A. Mission Description and Budget Item Justification

Today, the Department of Defense (DoD) faces many challenges. The High Performance Computing Modernization Program (HPCMP) provides cost effective tools the Department needs to address the most difficult defense problems. These tools include modern high performance computing hardware, parallel software, wide area networking services and the expertise to use them. The HPCMP helps enables DoD personnel to:

- Conduct basic research into areas such as materials, fuels, turbulence, proteins, electromagnetic fields, signal image relationships, structural response, blast effects, and combustion;
- Conduct applied research into areas such as aerodynamics applied to fighter and transport manned and unmanned aircraft, automated target recognition; hydrodynamics applied to new hull forms, structural performance of new armor and penetrator concepts, and explosives performance;
- Design elements of weapon systems such as the Hellfire missile, F-35, MRAP, C-17, the Javelin missile, and directed energy weapons systems;
- Test and evaluate weapons system performance on systems such as F-16, F-22, F-35, C-17, FCS, AIM-9X, GBU-39 and Striker;
- Immediately support urgent operations for efforts such as counter IED, hurricane Katrina related flood modeling, and the 2010 gulf oil spill migration modeling.

High Performance Computing has been identified as a key enabling technology essential to achieving the DoD's research development, test and evaluation (RDT&E) objectives. Validated requirements collected across the DoD reflect the needs of 4,400 scientists and engineers located at hundreds of locations (DoD Laboratories, Test Centers, academic institutions and commercial businesses). The integrated HPCMP consists of DoD Supercomputing Resource Centers (DSRCs), the Defense Research and Engineering Network (DREN), and Software Application Support. DSRCs are responsible for as large a part of DoD`s RDT&E computational workload as feasible. DSRCs provide extensive capabilities to address user requirements for hardware, software, and programming environments. Dedicated HPC project investments (DHPIs) augment the DSRCs to form the total HPCMP computational capability. DHPIs address critical HPC requirements that cannot be met at DSRCs, such as real-time, and near real-time computing requirements, and leverage significant HPC and mission expertise located at these remote sites. All elements of the HPCMP are interconnected with all S&T and T&E user sites via the Defense Research and Engineering Network. DREN provides the flexible wide area network fabric needed by the RDT&E community to support technology demonstrations and distributed test and evaluation events in addition to providing access to the supercomputing centers. The Software Application Support component develops critical common DoD applications programs that run efficiently on advanced HPC systems, supports technology transition activities with academic and commercial institutions, trains users, and builds collaborative programming environments. The Computational Research and Engineering Acquisition Tools and Environments (CREATE) produces supercomputer-based engineering design and test tools, improving the acquisition process for major weapons systems.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603755D8Z: *High Performance Computing Modernization Program*

The High Performance Computing Modernization Program transfers from the Office Secretary of Defense to the Department of the Army in FY2012

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	221.286	200.986	210.217	-	210.217
Current President's Budget	231.735	200.986	-	-	-
Total Adjustments	10.449	-	-210.217	-	-210.217
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-5.259	-			
• Other Program Adjustments	15.708	-	-210.217	-	-210.217

Change Summary Explanation

The High Performance Computing Modernization Program transfers from the Office Secretary of Defense to the Army in FY2012.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603755D8Z: *High Performance Computing Modernization Program*	PROJECT P507: *High Performance Computing Modernization Program*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P507: *High Performance Computing Modernization Program*	231.735	200.986	-	-	-	-	-	-	-	Continuing	Continuing

Note

The High Performance Computing Modernization Program transfers from the Office Secretary of Defense to the Department of the Army in FY2012.

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) High Performance Computing (HPC) Modernization Program supports the needs of the warfighter for technological superiority and military dominance on the battlefield by providing advanced computational services to U.S. weapons system scientists and engineers. By exploiting continuous advances in HPC technology, the defense research, development, test and evaluation (RDT&E) community is able to resolve critical scientific and engineering problems more quickly and with more precision. The results of these efforts feed directly into the acquisition process by improving weapons system designs through an increased fundamental understanding of materials, aerodynamics, chemistry, fuels, acoustics, signal image recognition, electromagnetics, and other areas of basic and applied research. As such, HPC has been identified as a key enabling technology essential to achieving the objectives of the DoD's RDT&E.

The program primarily provides supercomputing services through DoD Supercomputing Resource Centers (DSRCs). Additionally, support for specialized programs is provided through dedicated HPC project investments (DHPIs). DHPIs support a one-time need and have no support tail within the HPC Modernization Program. Centers and DHPIs directly support the DoD RDT&E laboratories and test centers and are accessible to local and remote scientists and engineers via high-speed network access. An integral part of the program is providing for the adaptation of broadband, widely used applications and algorithms to address RDT&E requirements, along with continued training of users as new system designs and concepts evolve. The program pursues continuous interaction with the national HPC infrastructure, including academia, industry, and other government agencies to facilitate the sharing of knowledge, tools, and expertise.

Annually validated requirements, collected across the DoD reflect the needs of 4,400 scientists and engineers located at hundreds of locations (DoD Laboratories, Test Centers, academic institutions and commercial businesses), and to drive program decisions. The integrated HPC program consists of DoD Supercomputing Resource Centers; the Defense Research and Engineering Network (DREN); and Software Application Support. DSRCs are responsible for as large a fraction of DoD`s S&T and T&E computational workload as feasible. DSRCs provide extensive capabilities to address user requirements for hardware, software, and programming environments. DHPIs augment the DSRCs to form the total HPC Modernization Program computational capability. DHPIs address critical HPC requirements that cannot be met at DSRCs, such as real-time, and near real-time computing requirements, and leverage significant HPC and mission expertise located at these remote sites. All elements of the HPC Modernization Program are interconnected with all S&T and T&E user sites via the DREN. Additionally, the Software Application Support component develops critical common DoD applications programs that run efficiently on advanced HPC systems, supports technology transition activities with academic and commercial institutions, trains users, and builds collaborative programming environments.

True modernization of DoD`s HPC capability and fulfillment of the program's vision and goals requires an on-going program strategy that addresses all aspects of HPC. While advancing the level of hardware performance is critical to success, the higher objective is to enable better scientific research, T&E environments, and

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603755D8Z: *High Performance Computing Modernization Program*	PROJECT P507: *High Performance Computing Modernization Program*

technology development for superior weapons, warfighting, and related support systems. The Program goals are to (1) acquire, deploy, operate and maintain best-value supercomputers; (2) acquire, develop, deploy and support software applications and computational work environments that enable critical DoD research, development and test challenges to be analyzed and solved; (3) acquire, deploy, operate and maintain a communications network that enables effective access to supercomputers and to distributed S&T/T&E computing environments; (4) continuously educate the RDT&E workforce with the knowledge needed to employ computational modeling effectively and efficiently; and (5) promote collaborative relationships among the DoD computational science community, the national computational science community and minority serving institutes.

The DREN provides wide area network (WAN) connectivity among the Department's S&T and T&E communities. The DREN is implemented through an Intersite Services Contract awarded to MCI (WORLDCOM) during FY 2002. A new DREN network services contract is planned to be awarded in FY 2011. DREN currently provides services to sites throughout the continental United States, Alaska, Hawaii, and can be extended overseas where necessary. A Secret DREN using common Secret systems high key with NSA certified Type-1 encryptors that can transport classified traffic at OC-3 (155 Mbps) has also been deployed. The HPC Modernization Program employs state-of-the-art WAN security and strong host and user security creating a defense-in-depth security architecture.

The High Performance Computing Modernization Program transfers from the Office Secretary of Defense to the Department of the Army in FY2012.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Department of Defense Supercomputing Resource Centers	117.221	100.493	-
Description: The program supports DoD Supercomputing Resource Centers that are responsible for as large a fraction of DoD's S&T and T&E computational workload as feasible. Dedicated HPC project investments (DHPIs) support a one-time need and have no legacy within the HPC Modernization Program. ***FY 2010 Accomplishments:*** Since 1994, the program has sustained and regularly modernized HPC systems, storage, and scientific data analysis and visualization capabilities to fulfill a significant portion of the science and technology (S&T) and test and evaluation (T&E) community HPC requirements. Six DSRCs were supported in FY 2010 and two DHPIs were competitively awarded at the Air Force Research Laboratory, Rome, NY and the Air Force Electronics Systems Command, Hanscom AFB, MA. Computational services were provided to over 4,000 scientists and engineers located at over 200 DoD Laboratories, Test Centers, academic institutions and commercial businesses. These services enabled basic research, applied research, design elements of weapon systems, test and evaluation of weapons system performance, and immediate support for urgent operations efforts (counter IED, hurricane Katrina, and the 2010 gulf oil spill). Also in FY 2010, the program made significant investments in mass data storage systems to replace systems that had reached the end of their life cycle. Status of FY 2010 Congressional adjustments: $3,120 Naval Research Lab prototype – Funds obligated			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603755D8Z: *High Performance Computing Modernization Program*	PROJECT P507: *High Performance Computing Modernization Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
$13,000 HPC Program Adjustments – Funds obligated ***FY 2011 Plans:*** Since 1994, the program has sustained and regularly modernized HPC systems, storage, and scientific data analysis and visualization capabilities to fulfill a significant portion of the science and technology (S&T) and test and evaluation (T&E) community HPC requirements. Six DSRCs are initially programmed for support in FY 2011 and two to five competitively awarded DHPIs are planned. The program will begin steps to streamline DSRC structure and will end the year with five DSRCs. ***FY 2012 Plans:*** The High Performance Computing Modernization Program transfers from the Office Secretary of Defense to the Department of the Army in FY2012.			
Title: Networking ***Description:*** The Defense Research and Engineering Network (DREN) provides wide area network (WAN) connectivity among the Department's S&T and T&E communities and provides the computer and network security for the HPCMP. ***FY 2010 Accomplishments:*** Network services to link all elements of the program will be provided by the DREN as well as operation of security systems and enhancements. The DREN network services contract re-competition was initiated in FY 2010. DREN provided a flexible wide area network fabric allowing the DoD RDT&E community to support technology demonstrations and distributed test and evaluation events as well as providing this community access to the six supercomputing centers. Collaborative work with the federal networking community and standards associations assured that the DREN remained compatible with technology changes. ***FY 2011 Plans:*** Network services to link all elements of the program will be provided by the DREN as well as operation of security systems and enhancements. Collaborative work with the federal networking community and standards associations will continue to assure that the DREN will remain compatible with future technology change. ***FY 2012 Plans:*** The High Performance Computing Modernization Program transfers from the Office Secretary of Defense to the Department of the Army in FY2012.	29.964	31.735	-
Title: Software Applications ***Description:*** Software Applications provide for the adaptation of broadband, widely used applications and algorithms to address RDT&E requirements, continued training of users as new system designs and concepts evolve, and continuous interaction	84.550	68.758	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
with the national HPC infrastructure, including academia, industry, and other government agencies to facilitate the sharing of knowledge, tools, and expertise. ***FY 2010 Accomplishments:*** Computational Research and Engineering Acquisition Tools and Environments (CREATE) continued development of supercomputer-based engineering design and test tools to improve the acquisition process for major weapons systems across the Department. Development efforts in software programs continued to mature as other projects were completed, and others begun with a greater emphasis on engineering applications. Software Institutes and portfolios developed shared scalable applications to exploit scalable HPC assets. Final software portfolio projects were completed. The Academic Outreach Program encouraged and supported computational science in universities across the U.S. The Programming Environments and Training (PETTT) effort provided computational and computer science support to the DoD HPC user community through interaction and collaborative projects with academic and industrial partners. A new contract providing for PETTT services was awarded in FY2010. Technologies and methodologies were developed to protect and limit end-use of high performance computing applications software while minimizing the burden on authorized end-users. ***FY 2011 Plans:*** Computational Research and Engineering Acquisition Tools and Environments (CREATE) will continue development of supercomputer-based engineering design and test tools to improve the acquisition process for major weapons systems across the Department. Development efforts in software programs will continue to mature as other projects are completed, and others begun with a greater emphasis on engineering applications. Software Institutes will continue to develop shared scalable applications to exploit scalable HPC assets. However, the number of institutes will be adjusted as the program is re-focused. An Academic Outreach Program will continue be supported to encourage and support computational science in universities across the United States. The Programming Environments and Training effort will provide computational and computer science support to the DoD HPC user community through interaction and collaborative projects with academic and industrial partners. Efforts to develop technologies and methodologies to protect and limit end-use of high performance computing applications software will be completed. ***FY 2012 Plans:*** The High Performance Computing Modernization Program transfers from the Office Secretary of Defense to the Department of the Army in FY2012.			
Accomplishments/Planned Programs Subtotals	231.735	200.986	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603755D8Z: *High Performance Computing Modernization Program*	PROJECT P507: *High Performance Computing Modernization Program*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0902198D8Z: *Major Equipment OSD*	52.936	53.489	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Strategic Goals supported are as follows:

Defense Supercomputing Resource Centers - Method of Measurement: Habus (HPCMP standard measurement of computational performance)

FY2010: Existing Baseline – 2024.0/ Planned Performance Improvement - Requirement Goal – 2000.0/ Actual Performance Improvement – 2251.0
FY2011: Existing Baseline – 4275.0/ Planned Performance Improvement - Requirement Goal – 1575.0
Networking - Method of Measurement: Gigabits per second

FY2010: Existing Baseline – 30.6/ Planned Performance Improvement - Requirement Goal – 1.0/ Actual Performance Improvement – 2.1
FY2011: Existing Baseline – 32.7/ Planned Performance Improvement - Requirement Goal – 1.0

Software Applications - Methods of Measurement: Customer Satisfaction on a 0-5 scale

FY2010: Existing Baseline – 4.2/ Planned Performance Improvement - Requirement Goal – 4.2/ Actual Performance Improvement – 4.2
FY2011: Existing Baseline – 4.2/ Planned Performance Improvement - Requirement Goal – 4.2

Comment: All FY2010 actual performance metrics met or exceeded those planned.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	28.319	30.910	30.424	-	30.424	30.881	31.471	32.133	33.076	Continuing	Continuing
P781: *Software Engineering Institute (SEI)*	21.242	23.294	23.007	-	23.007	23.377	23.897	24.480	24.979	Continuing	Continuing
P783: *Software Producibility Initiative*	7.077	7.616	7.417	-	7.417	7.504	7.574	7.653	8.097	Continuing	Continuing

A. Mission Description and Budget Item Justification

Software is key to meeting the Department of Defense's (DoD's) increasing demand for high-quality, affordable, and timely national defense systems. Systemic software issues are significant contributors to poor program execution, and reliance on software-intensive mobile and net-based products and systems has been increasing (e.g., Joint Tactical Radio System, DDG-1000, Joint Strike Fighter, F-22, and Army Modernization). As stated in the 2010 National Research Council of the National Academy of Sciences report entitled Critical Code, "It is dangerous to conclude that we are reaching a plateau in capability and technology for software producibility." The report notes that software is "…unconstrained by traditional physical engineering limitations…" and what we can accomplish is derived "…from [the] human intellectual capacity to conceptualize and understand systems…." With growing global parity in software engineering, the DoD must maintain leadership to avoid strategic surprise. The Software Engineering Institute (SEI) Program Element (PE) addresses the critical need to research, develop, and rapidly transition state-of-the-art technology and best practices to improve the engineering, management, fielding, evolution, and acquisition of software-intensive DoD systems. The SEI PE's program of work seeks to coordinate across the Department and the Services and leverages expertise in industry and academia to enable the development of Joint capabilities.

Software is more pervasive than ever, and computer programs are growing in size and complexity. Designing, managing, and securing integrated and large-scale mission-critical systems are abilities that the DoD and Defense Industrial Base (DIB) have not yet been mastered. P781 of this PE funds the SEI Federally Funded Research and Development Center (FFRDC). The SEI FFRDC is an institute which enables the exploitation of emerging software technology by bringing engineering, management, and security discipline to software acquisition, development, and evolution, focusing on software technology areas judged to be of the highest payoff in meeting defense needs.

Private sector investment has created rapid advances in information technologies, but the pace of transition to DoD applications is often very slow or the commercial applications do not meet DoD-unique needs (e.g., high assurance software or large scale integrated systems). The DoD needs to create opportunities to discover emerging technologies, to evaluate their potential to fit DoD needs, and, where appropriate, conduct critical tests of the technologies under DoD conditions. P783 of this PE includes the Software Producibility Initiative and Technology from Non-Traditional Sources (TNTS) Initiative. The Software Producibility Initiative seeks to research and transition software science and tools to model and evaluate the performance and control complexities of software-intensive systems. It also seeks to improve the design and sustainment of those systems. The TNTS Initiative seeks to facilitate early interactions between innovative companies and DoD users to accelerate the application of emerging technical solutions addressing DoD needs, reduce development costs, avoid technological surprise, and understand how commercial developments impact DoD programs.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603781D8Z: *Software Engineering Institute (SEI)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	31.298	30.910	31.252	-	31.252
Current President's Budget	28.319	30.910	30.424	-	30.424
Total Adjustments	-2.979	-	-0.828	-	-0.828
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.750	-			
• SBIR/STTR Transfer	-0.928	-			
• Other Program Adjustments	-0.301	-	-	-	-
• Defense Efficiency - Reports, Studies, Boards and Commissions	-	-	-0.785	-	-0.785
• Economic Assumptions	-	-	-0.043	-	-0.043

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P781: *Software Engineering Institute (SEI)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P781: *Software Engineering Institute (SEI)*	21.242	23.294	23.007	-	23.007	23.377	23.897	24.480	24.979	Continuing	Continuing

A. Mission Description and Budget Item Justification

The SEI FFRDC was established in 1984 as an integral part of the DoD's initiative to identify, evaluate, and transition high-leverage software engineering technologies and practices. The SEI grows unique software research and program support capability in a space where the Defense Industrial Base (DIB) and academia cannot as readily address challenges. The mission of the SEI is to provide technical leadership and innovation through research and development to advance the practice of software engineering and technology in support of DoD needs. The Center works across government, industry, and academia to improve the state of software engineering from technical, acquisition, and management perspectives; engages in applied research and development of critical software technologies and tools, and collaborates with the larger software engineering research community; facilitates rapid, value-added transition of software engineering technologies into practice; and evaluates and calibrates emerging software engineering technologies to determine their potential for improving the development and evolution of software-intensive DoD systems. Since its inception, the SEI has helped to transform the fields of software engineering and acquisition, network security, real-time systems and software/system architecture and construction, and software engineering process management.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: ACQUISITION PRACTICES FOR DOD SOFTWARE INTENSIVE SYSTEMS - ACQUISITION SUPPORT PROGRAM (ASP)	2.324	1.973	1.810

Description: ASP develops, delivers, and codifies solutions from state-of-the-art research to affect acquisition challenges in a preventative, pro-active, and systematic manner to provide enduring performance impact to programs across the DoD and Intelligence Community (IC).

FY 2010 Accomplishments:

• Published twelfth Acquisition Archetype, "Shooting the Messenger," and completed two additional publications based on investigating recurring causes of failure in DoD programs.
• Pursued the establishment of an SEI Acquisition Excellence Knowledge Base and collected software acquisition knowledge assets for broader collaboration and learning in areas such as agile methods, Request for Proposal (RFP) language, and acquisition strategy.
• Developed e-Learning modules based on researched DoD needs including "Using Agile in DoD Acquisition."
• Completed an analysis of service oriented architecture (SOA) issues and codified these in "Documenting SOA using the Views and Beyond Approach."
• Developed two Mission Success in Complex Environments (MSCE) courses including Practical Risk Management and Mission Diagnostics Protocol; introduced research in supply chain management, software assurance, and software security measurement.

FY 2011 Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P781: *Software Engineering Institute (SEI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Extend the SEI Acquisition Excellence Knowledge Base to include performance metrics and explore opportunities to collaborate with system integrator practitioners and other DoD knowledge centers. • Research and identify common reasons for software system acquisition failure and disseminate findings to DoD acquisition programs. • Develop new courseware, publications, and collaboration venues to disseminate knowledge and best practices to DoD acquisition programs. • Create derivative works of systems thinking analysis and Acquisition Archetypes to address potential solutions, augment training, and advance the state of practice in software engineering, systems engineering, and software and systems DoD acquisition. ***FY 2012 Plans:*** • Discover gap areas in DoD acquisition and software knowledge and practices, and incorporate these into research agendas to develop needed capabilities. • Create new and unique knowledge assets in the Acquisition Excellence Knowledge Base, targeting the needs of the acquisition workforce (senior executives and below).			
Title: SOFTWARE ENGINEERING TECHNICAL PRACTICES - NETWORKED SYSTEMS SURVIVABILITY PROGRAM (NSS) ***Description:*** NSS identifies, develops, matures, and broadly transitions new technologies, system development practices, and system management practices that enable informed trust and confidence in using information and communication technology. This Program houses the Computer Emergency Response Team (CERT), a critical asset which provides DoD and other government and private sector organizations with the information and training necessary to improve the ability to protect information infrastructures from current and emerging threats. NSS's Survivable Systems Engineering (SSE) Initiative develops and adapts practices, tools, techniques, and measures for addressing security and survivability issues in all phases of the development and acquisition lifecycles for software and software-reliant systems. The Assuring Network Dependent Missions (ANM) Initiative concentrates on the bodies of practice, tools, and security technologies that address the dynamics of operational systems, seeking to ensure that fielded systems meet their survivability requirements as vulnerabilities and threats evolve. ***FY 2010 Accomplishments:*** • Established the CERT Source Code Analysis Labs (“SCALe”) to perform certifications to satisfy the demand for source code assessments in support of DoD acquisition decision making. • Developed and executed a Tactical Response and Analysis Challenge training exercise as a part of the Office of the Secretary of Defense’s Network and Information Integration (OSD/NII) International Cyber Defense Workshop. • Installed and configured the CERT Exercise Network (XNET) in the U.S. Army Reserve Information Operations prototype range environment.	3.466	6.380	6.235

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P781: *Software Engineering Institute (SEI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Completed and published the CERT-Resiliency Management Model (CERT-RMM) technical report and developed a CERT-RMM appraisal method. • Released a new version of the System for Internet Level Knowledge (SILK), a collection of security event analysis tools that detect problems not detected by commercially available intrusion detection tools. • Developed and released Security Quality Requirements Engineering (SQUARE) tools with the Carnegie Mellon University Masters of Software Engineering team. • Developed a static analysis tool checker for C++ and Java to help assure key security properties in mission-critical software-reliant networked systems. ***FY 2011 Plans:*** • Explore emerging software and hardware-based approaches for establishing trusted transactions to significantly improve networked systems security and enterprise resiliency. • Provide a proof-of-concept demonstration of trusted application operations in a known compromised environment. • Develop secure coding standards for mission-critical software-reliant acquisition for C++ and Java and transition to international standards bodies. • Develop and pilot a prototype a Secure Mission Assurance Diagnostic Method and software security measures identification method. • Improve Cyber Mission Assurance (CMA) through measurement by developing a framework and CMA metrics to enable data-driven decision-making. • Develop and pilot a framework and new metrics for measuring resiliency in mission-critical software-reliant networked systems. • Develop system dynamics models of insider threat based on findings from the analysis of actual cases and begin to develop a prototype for DoD and other government and private sector organizations to measure insider threat risk based on exposure. ***FY 2012 Plans:*** • Pilot methods for identifying and selecting software security measures and measurement processes. • Conduct research needed to prepare acquirers, managers, developers, and operators of mission-critical software-reliant networked systems to address security and survivability throughout the design and acquisition life cycles to enable better risk assessment and mitigation. • Develop and transition highly specialized tools and practices that address challenges across the spectrum of network operations, incident response, and mitigation to reduce the opportunity for, and impact of, cyber attacks.			
Title: SOFTWARE ENGINEERING TECHNICAL PRACTICES – RESEARCH, TECHNOLOGY, AND SYSTEM SOLUTIONS PROGRAM (RTSS)	12.085	13.284	13.378

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P781: *Software Engineering Institute (SEI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: RTSS performs research focusing on the structure and behavior of software-reliant acquisition systems and provides the technical foundations, methods, practices, and solutions that enable assured and flexible system capabilities at all scales. RTSS's Architecture Centric Engineering (ACE) Initiative creates, matures, pilots, and transitions technical foundations and practices for developing and evolving mission-critical software-reliant acquisition systems at all scales to ensure conformity to their architectures. The System of Systems Practices (SoSP) Initiative is dedicated to the effective integration and interoperation of distributed systems that must work together in net-centric operations and SoS environments. The System of Systems Software Assurance (SoSSA) Initiative aims to reduce the amount of time and effort required to achieve technically justified confidence that SoSs will behave acceptably in their actual environments of use. ***FY 2010 Accomplishments:*** • Developed a theoretical framework that applies economic-and architecture-based analyses for evaluating architecture evolution paths to significantly improve the quality of a system evolution effort. • Developed linear decision diagrams, which represent a significant advance in static analysis and model checking, particularly in the case of control-intensive numeric programs, such as avionics mission computing systems and shipboard combat systems. • Explored techniques for addressing architectural challenges and risks throughout the development lifecycle and created a pilot-ready method for use in DoD acquisition systems. • Developed concept demonstrations for experiments related to quality of service (QoS) for mobile, wireless networks and bandwidth allocation for Unmanned Aerial Vehicles (UAVs). • Completed and published research on testing in service-oriented environments, such as the US Navy's Consolidated Afloat Networks and Enterprise Services (CANES) program. • Developed the Service Migration and Reuse Technique Enterprise Service Portfolio (SMART-ESP) method, which provides a systematic way for DoD organizations to identify potential services from across an enterprise portfolio – an important early step in a successful Service-Oriented Architecture (SOA) migration. • Completed and published a case study on system of systems (SoS) interoperability challenges and promising approaches. • Completed research on the impact of software on the overall reliability of mission-critical software-reliant acquisition systems. ***FY 2011 Plans:*** • Develop a reliability framework, new scheduling algorithms for real-time multi-core platforms, architecture-based testing strategies, and scalable static analysis capabilities that is designed for us in mission-critical software-reliant acquisition systems. • Extend quality attribute analysis to dynamic settings and demonstrate a comprehensive framework for developing DoD cyber-physical systems, such as avionics mission computing systems or shipboard combat systems. • Develop an initial set of SoS architecture patterns and demonstrate an approach for blending architecture-centric and agile techniques.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P781: *Software Engineering Institute (SEI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Demonstrate the synergistic use of quantitative and qualitative methods for large-scale system design, analysis, construction, and evolution. • Demonstrate concepts that will enable the design and analysis of ultra-large scale (ULS) acquisition systems from a socio-technical point of view. • Demonstrate the ability to use ULS acquisition system architectures for predictably satisfying ULS system quality attributes. • Develop SoS engineering principles and frameworks in the areas of security and federated identity management in constrained environments, data interoperability, and other technical challenge areas for DoD SoS implementations. • Define principles for the successful use of cloud computing, service and infrastructure versioning, context-aware applications, and other emerging SoS technologies in DoD SoS implementations, and instantiate and analyze the effectiveness of SoS technologies in DoD acquisition programs. • Develop principles for determining which assurance activities and arguments contribute most to obtaining justified confidence in mission-critical software-reliant acquisition system behavior. • Investigate the types of commitments that lead to fragile or more robust and desirable SoS behavior, types of defects in the commitments that lead to unacceptable SoS outcomes, and methods for evaluating the impact of failing to live up to the commitments in the context of DoD acquisition systems. ***FY 2012 Plans:*** • Continue to research the effective integration and interoperation of distributed systems that must work together in network-centric operations and SoS environments, and transition integrated methods and practices that reduce the time to assure acceptable DoD acquisition system behavior. • Investigate and develop software environment support for establishing, maintaining, and monitoring the use of consistent architecture patterns across SoS constituents to simplify and speed up integration processes. • Continue to investigate and apply architectural principles to DoD cyber-physical systems, such as resource management and reliability. • Develop a general framework for analyzing the interactions between the human and computational aspects of ULS systems.			
Title: SOFTWARE ENGINEERING MANAGEMENT PRACTICES – SOFTWARE ENGINEERING PROCESS MANAGEMENT PROGRAM (SEPM) ***Description:*** SEPM identifies, matures, and transitions proven process management practices and performance improvement and measurement techniques for software and related disciplines in support of the management, development, and acquisition of current and future software, systems, and services. SEPM's Capability Maturity Model Integration (CMMI) Initiative offers a systematic, well-understood, model-based approach to capability development for software-enabled systems and services, and a means to improve the delivery of needed products and services. The Software Engineering Measurement and Analysis	3.367	1.657	1.584

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P781: *Software Engineering Institute (SEI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
(SEMA) Initiative provides practical guidance and expertise in measurement and analysis to support management, engineering, acquisition, and services. The Research into Performance Measurement and Analytical Methods (RPMAM) Initiative conducts research to improve data quality, analysis, and extraction and to ensure that benefit and value is realized from investments in large data repositories, as well as addresses the use of probabilistic methods for improved accuracy in the development of early system cost estimates. ***FY 2010 Accomplishments:*** • Completed development of the CMMI v1.3 models and appraisal methods, resolving incompatibilities across the existing constellations and improving the definitions of and guidance on the high maturity level Process Areas. • Completed Version 1.0 of the CMMI Upgrade Training for the CMMI Development constellation. • Completed study showing new evidence about effective implementations of CMMI in the defense industrial base and in the DoD. • Published the Measurement and Analysis Infrastructure Diagnostic (MAID) Evaluation Criteria and Method Description Document and completed pilot trials. • Published reports summarizing survey results and workshops on CMMI High Maturity Measurement and Analysis techniques and impacts. • Published a CMMI/Six Sigma Body of Knowledge. ***FY 2011 Plans:*** • Investigate methods to improve the quality of program management data reported to DoD repositories and develop effective data checking rules. • Investigate the use of advanced probabilistic methods to model and better account for the uncertainties and influence of uncontrollable factors in DoD acquisition systems in order to provide better cost estimates. ***FY 2012 Plans:*** • Research and publish models, results, and heuristics for use in analysis, diagnostics, feasibility studies, risk evaluation, and early warning indicators in DoD acquisition systems. • Research methods for more completely identifying the set of stated and unstated needs and requirements for mission-critical software-reliant acquisition systems, with the goal of dramatically reducing requirements volatility and rework. • Continue research into the automated detection of data anomalies. Based on results of FY11 work, broaden the scale and diversity of data types and data objects to be analyzed and assessed for detection of anomalies. • Continue validation studies of research begun in FY11 to investigate use of probabilistic methods for early life cycle cost estimation.			
Accomplishments/Planned Programs Subtotals	21.242	23.294	23.007

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P781: *Software Engineering Institute (SEI)*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

- Transition of tools and practices for use in DoD programs of record and to the DIB, and number of agencies and organizations sponsoring work.
- Number of publications in refereed journals and peer reviewed reports.
- Number of external research collaborations and interactions with the broader software engineering research community.
- Adoption of coding standards and process techniques by standards bodies, working groups, and software/systems engineering organizations.
- Number of training courses and curricula developed to contribute to the growth of capability in the software engineering research and development community and software/system acquisition workforce.
- Development of new scalable technical and software-enabled cyber security approaches that address software assurance and improve enterprise resiliency.
- Reduced number of mission-critical software-reliant acquisition program failures and cost and schedule overruns, as well as quantitative improvements in overall system cost, time to develop, and performance – this will be evidenced by: reductions in time to test software and the amount of rework required; improved ability to articulate software requirements; development of techniques that offer orders of magnitude improvement in software productivity; development of new software algorithms and abstractions; and decreased number of software defects found through application of effective process and software development methods.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P783: *Software Producibility Initiative*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P783: *Software Producibility Initiative*	7.077	7.616	7.417	-	7.417	7.504	7.574	7.653	8.097	Continuing	Continuing

A. Mission Description and Budget Item Justification

Shortcomings in software development often lead to schedule slippage, cost growth, and mission compromise. These shortcomings can frequently be traced to software development technologies which are not capable of addressing the scale and complexity of the software needed in today's systems. The Software Producibility Initiative seeks to conduct an integrated program of research from applied research through demonstration and evaluation to advance the state-of-the-art in the producibility of software for DoD systems, particularly those systems characterized by high complexity, need for robustness, information assurance, real-time performance, and physical distribution. The Initiative maintains a portfolio of work relevant to the Warfighter and DoD needs by periodically evaluating technology development efforts, retiring those that are under performing, and starting new efforts based on a risk-reward priority list.

In addition, obtaining an early, accurate understanding of the technological advances emerging from small, innovative companies has been problematic for the DoD due to these companies often avoiding or failing to notice federal sales opportunities. Redoing work that is being conducted in the private sector does not effectively utilize resources. The TNTS Initiative identifies and selectively funds experimentation with innovative, emerging technologies to evaluate their potential for DoD application, with the ultimate goal of accelerating the delivery of capabilities to the Services and the Warfighter.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: SOFTWARE PRODUCIBILITY INITIATIVE	2.772	3.164	7.417
Description: The Software Producibility Initiative seeks to improve the DoD's ability to design, build, test, and sustain software-intensive systems which meet mission critical requirements, exhibit predictable behavior, and enable evolution and interoperability. Technology thrust areas include specification of complex requirements; "correct-by-construction" software development; scalable composition; high-confidence software and middleware; system architectures for network-centric environments; technologies for system visualization, testing, verification, and validation; and model-driven development approaches. Performers include Army Communications Electronics Research Development and Engineering Center (CERDEC), Army Research Laboratory (ARL), Naval Research Laboratory (NRL), Space and Naval Warfare Center (SPAWAR), and Air Force Research Laboratory (AFRL), as well as university and industry collaborators.			
FY 2010 Accomplishments: • Developed a prototype visualization canvas for understanding large systems (10+ million lines of code) which works at multiple system levels; tool was employed by CISCO to refactor Internetwork Operating Systems (IOS) dependencies and has been adopted by the commercial CodeSonar product and the Navy/OSD Small Business Innovation Research (SBIR) program. • Developed a mathematically rigorous interface formalism that helps to ensure correct composition of components developed independently.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P783: *Software Producibility Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Developed an end-to-end modeling and simulation environment to experiment with and analyze SOAs on Mobile Ad-hoc Networks (MANETs) and integration technologies for testing real network applications with the simulated networks. • Showed applicability of existing dynamical systems techniques for uncertainty quantification in software systems, and increased simulation speeds by 10-100x. • Developed a collaboration environment that houses over two dozen challenge problems which span challenges such as multi-core, deployment optimization, embedded systems, and software evolution; effort spawned a new technology insertion experiment intended for transition to current aircraft programs as well as a collaboration with the National Science Foundation's Cyber Physical Systems-Virtual Organization. • Developed preliminary theories and algorithms for extracting Behavioral Type Signatures in C-based components to facilitate trustworthy integration of independently developed software components. ***FY 2011 Plans:*** • Continue enhancements to the visualization prototype, and release an architectural visualization product suite bundled with code analysis tools to support effective development of large software systems; transition to large DoD programs. • Leverage the interface formalism to broaden the range of composition errors that can be prevented and facilitate definition of interfaces by software developers to enable earlier detection of errors and problems that often only emerge during system integration. • Pursue instantiations of the collaboration environment with the Air Force Cyber Innovation Center and integration with Software Engineering Institute research programs, and grow the user community to enable more systematic transition and validation of systems and software engineering technologies. • Develop a prototype tool for demonstrating how to correctly compose software components in reactive software systems, allowing for concurrent engineering and component reuse. • Develop a basic capability to graphically compose scalable system software that runs on machines ranging from laptops and multi-core workstations to supercomputers. • Create a working prototype that extends code coverage analysis to binary (object code) to enable detection and defense against attacks and provide the ability to analyze applications without their source. ***FY 2012 Plans:*** • Develop open source demonstration tools enabling the specification of interface formalisms, definition of component interfaces, and the checking of component composition. • Perform a use-case demonstration of the graphical drag-and-drop scalable software development framework to show support of collaborative design, development, test, evaluation, and optimization of complex DoD systems-of-systems software, resulting in scalable systems, faster development, software reuse, and lower life-cycle costs.			
Title: TECHNOLOGY FROM NON-TRADITIONAL SOURCES (TNTS) INITIATIVE	4.305	4.452	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P783: *Software Producibility Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The TNTS Initiative utilizes workshops and direct interaction with DoD users to identify needs and relevant emerging private solutions, and provides experimentation funds for promising technologies to allow for limited, DoD-internal buy-and-try experimentation money to aid in procurement decisions. Experimentation sponsors include the National Security Agency, Office of Naval Research, AFRL, Air Force Materiel Command Electronic Systems Center (AFMC ESC), CERDEC, SPAWAR, U.S. Marine Corps, and U.S. Coast Guard. ***FY 2010 Accomplishments:*** • Conducted thorough technical reviews of 260 companies with innovative and emerging products that could be useful to the DoD. Introduced CERDEC, Air Force Electronics Systems Center and National Security Agency representatives to 68 companies with the most promising solutions to stated operational needs. • Provided experimentation funding to evaluate promising capabilities in: protection of internal resources from web attacks; ultra-wideband antenna for ground and unmanned airborne platforms; data acceleration tool; integrated Ultra-High Frequency (UHF) Radio Frequency Identification (RFID) reader/antenna system; network administrator's monitoring; and digital TV signals as a non-Global Positioning System (non-GPS) navigation tool. The evaluations for each of these efforts will be completed in FY11 with operational users from Army CERDEC and AFMC ESC ready to incorporate the most successful capabilities. • Experimentation with SPAWAR and the IC resulted in operational deployment of new capabilities in on-line collaboration for improved internal communications and planning, and malware detection and remediation. ***FY 2011 Plans:*** • Conduct thorough technical reviews of 16 companies with innovative and emerging products that could be useful for technology forecasting for Office of the Director, Defense Research and Engineering (DDR&E). • Conduct 3-5 additional workshops to define needs and provide innovative emerging technology solutions. Host organizations for the workshops include the Office of the Deputy Assistant Secretary of the Navy (Energy), the United States Marine Corps Warfighting Laboratory (MCWL), and the Defense Intelligence Agency (DIA) • Provide experimentation funding to organizations hosting workshops (see above) for the evaluation of 10-15 innovative emerging technology products that deliver capabilities at optimum cost to the warfighter. ***FY 2012 Plans:*** The TNTS Initiative will be moved from P783 under the SEI PE to P832 under the Quick Reaction Special Projects PE (0603826D8Z) in FY 2012 and beyond.			
Accomplishments/Planned Programs Subtotals	7.077	7.616	7.417

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603781D8Z: *Software Engineering Institute (SEI)*	PROJECT P783: *Software Producibility Initiative*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

- Number of open source tools developed which enable the specification of interface formalisms, the definition of component interfaces, and the checking of component composition.
- Demonstrable reduction in the number of vulnerabilities and errors detected in software code due to an improved ability to visualize and execute large software systems as compared to the state of the practice.
- Number of transitions of promising systems and software engineering technologies to the DoD and DIB, and successful adoption of technologies by early adopter partners.
- Number of successful deployments in operational contexts of emerging technologies from small, innovative companies.
- Observed improvements in cost, schedule, and performance via advances in the producibility of software for complex DoD systems and the productivity of software developers.
- Number of multiple, active collaborations achieved between Software Producibility performers and the broader software engineering research community.
- Number of synergies/coordination/Joint activities across research efforts.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	88.163	78.244	89.925	-	89.925	103.089	98.844	126.981	130.853	Continuing	Continuing
P826: *Quick Reaction Fund*	19.229	29.577	24.883	-	24.883	25.304	28.383	54.795	55.229	Continuing	Continuing
P828: *Rapid Reaction Fund*	51.138	48.667	48.486	-	48.486	59.885	53.091	54.425	57.085	Continuing	Continuing
P829: *Technology Transition Initiative (TTI)*	17.796	-	-	-	-	-	-	-	-	Continuing	Continuing
P830: *RDT&E Architecture and Integration*	-	-	10.625	-	10.625	11.527	11.192	11.424	11.814	Continuing	Continuing
P831: *Joint Rapid Acquisition Cell Support*	-	-	1.771	-	1.771	1.968	1.970	2.053	2.272	Continuing	Continuing
P832: *Software Producibility/ Technology from Non-Traditional Sources (TNTS) Initiative*	-	-	4.160	-	4.160	4.405	4.208	4.284	4.453	Continuing	Continuing

Note

In FY 2012, Quick Reaction Special Projects (QRSP) introduces three new project codes to the program element and reflect OSD interests and DoD priorities in Overseas Contingency Operations.

A. Mission Description and Budget Item Justification

Quick Reaction Special Projects (QRSP) Program supports six separate projects that provide rapid funding to expedite new development and transition of new technologies to the warfighter. The projects that are part of the QRSP are the Quick Reaction Fund (QRF), Technology Transition Initiative (TTI), the Rapid Reaction Fund (RRF), The RDT&E Architecture and Integration (RAI) program, Joint Rapid Acquisition Cell (JRAC), and the Software Producibility/TNTS initiative (SPTI). QRSP provides the flexibility to respond to emergent DoD issues and address technology surprises and needs within the years of execution outside the two-year budget cycle.

The Technology Transition Initiative (TTI), authorized by Title 10 and Section 215 of the FY2003 Defense Authorization Act, facilitates the rapid transition of new technologies from the DoD science and technology (S&T) base into DoD acquisition programs. The program addresses the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter. Since the program's inception in FY 2003, 78 projects have been initiated and 50 are complete. Of the 50 completed projects, 35 (70%) have successfully transitioned to DoD Acquisition Programs of Record or procurement contracts for operational use and subsequent fielding; exceeding the objective of 30% for demonstration programs (Strategic Objective 4-3, Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD (AT&L).

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*

The Quick Reaction Fund (QRF) program is focused on responding to emergent needs during the execution years that take advantage of technology breakthroughs in rapidly evolving technologies. Examples of the types of projects that are envisioned include: accelerating promising research that will enable transformation; or will fill critical gaps in DoD acquisition programs and will last no longer than 12 months; or maturation of technologies critically needed by combatant commanders (COCOMS) for operations. Typically these projects are on the technology maturity scale where an idea or technology opportunity is proven and demonstrated.

The Rapid Reactions Fund (RRF) objectives are to leverage the DoD science and technology base and those of the other Federal Departments; stimulate interagency coordination and cooperation; accelerate the fielding of capabilities and concepts to counter emerging threats; and provide feedback to the S&T community to guide long term developmental strategies. The task force works to anticipate adversaries' exploitation of technology, including available and advanced capabilities. Additionally, the task force works to exploit technology developed outside of DoD in the commercial sector, in academia and international arenas as well as anticipate adversary's application of available and advanced technology. The average length of a RRTO program falls within an 8-12 month range in order to more effectively aid the warfighter. RRF consistently exceeds the transition objective of 30% for demonstration programs (DoD Strategic Objective 4-3).

The RDT&E Architecture and Integration (RAI) program objectives are to enhance and expand the Joint Experimentation Range Complexes (JERCs) venue and spectrum of evaluations to include analysis of a cohesive Forward Operating Base (FOB) defensive architecture, future homemade explosives (HME), future Improvised Explosive Devices (IEDs), counter IED capability development and characterization of future electro-magnetic environments. These focal areas range beyond the implementation and execution window of the Joint Improvised Explosive Device Defeat Organization (JIEDDO) program and aligns under the Quadrennial Defense Review (QDR) focal area “Institutionalizing Rapid Acquisition Capability” and its third tenant “assessing alternatives and executing a solution (acquisition)”.

The Joint Rapid Acquisition Cell (JRAC) objectives are focused on responding to Joint Urgent Operational Needs (JUONS) that have been submitted by Combatant Commanders and validated by the Joint Staff. The JRAC’s objective is to manage the delivery of capability as requested by the COCOM in a time frame acceptable to the COCOM. The JRAC manages the overall effort to fulfill JUONS. Efforts, in most instances, are conducted outside of the processes described for the Defense Acquisition System in DoD Directive 5000.1 and utilize contingency and other rapid acquisition authorities.

Software Producibility/ TNTS Initiative objectives are to discover emerging technologies generally from small innovative companies that have not done prior business with DoD, evaluate their potential to fit DoD needs, and where appropriate conduct critical tests of the components or software under operational conditions. To facilitate early interactions and meaningful information exchanges between the innovative companies and operational users. And, accelerate the application of emerging technical solutions to DoD needs, reduce development costs, and avoid potentially disastrous technological surprises.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	73.583	78.244	86.662	-	86.662
Current President's Budget	88.163	78.244	89.925	-	89.925
Total Adjustments	14.580	-	3.263	-	3.263
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	16.550	-			
• SBIR/STTR Transfer	-1.861	-			
• DDR&E Baseline Review	-	-	7.053	-	7.053
• Defense Efficiency-Report, Studies, Boards and Commissions	-	-	-2.349	-	-2.349
• Defense Efficiency-Contractor Staff Support Efficiency	-	-	-1.169	-	-1.169
• Economic Assumptions	-	-	-0.272	-	-0.272
• Other internal adjustment	-0.109	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P828: *Rapid Reaction Fund*		
Congressional Add: *Small Craft Threat Identification (SCTI)*	1.200	-
Congressional Add Subtotals for Project: P828	1.200	-
Congressional Add Totals for all Projects	1.200	-

Change Summary Explanation

Note: In FY 2011, Technology Transition Initiative (TTI), resources will be transferred from Quick Reaction Special Projects to PE 0603942D8Z (Technology Transfer and Transition) as part of an effort to more effectively align interwoven program efforts that will benefit management communications, budget justification, fiscal tracking and improve overall program resource management of Technology Transfer and Transition efforts. Additionally, three new project codes were created in FY 2012 to reflect DOD/DDR&E priorities (P830 - RDT&E Architecture and Integration, P831 - Joint Rapid Acquisition Cell Support, P832 - Software Producibility/TNTS Initiative).

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*

DDR&E Baseline Review. DDR&E implemented a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions. $7.053M was added to fund three new projects P830, P831, and P832.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P826: *Quick Reaction Fund*	19.229	29.577	24.883	-	24.883	25.304	28.383	54.795	55.229	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Quick Reaction Special Projects (QRSP) Program supports six separate projects that provide rapid funding to expedite new development and transition of new technologies to the war-fighter. QRSP provides the flexibility to respond to emergent (Department of Defense) DoD issues and addresses technology surprises and needs that may arise outside the two-year budget cycle.

The Quick Reaction Fund (QRF) Program, which is a program within QRSP, focuses on responding to emergent needs during the execution years that take advantage of technology breakthroughs in rapidly evolving technologies. Examples of the types of projects include: accelerating promising research that will enable transformation; filling critical gaps in DoD acquisition programs and will last no longer than 12 months; or maturation of technologies critically needed by combatant commanders for operations. Typically these projects are on the technology maturity scale where an idea or technology opportunity is proven and demonstrated.

The QRF Program also provides Services, Components, Combatant Commanders and Force Providers opportunities to capitalize on technologies that are at a relatively high Technology Readiness Level (TRL), and to rapidly field-test promising new operational prototypes that can immediately have an impact on military operations. It should be noted that QRF initiatives are limited to those that will deliver a military operational prototype application within 6 - 12 months of being funded.

The QRF program is focused on selecting proposals that have the potential to address conventional, disruptive, catastrophic and irregular threats. More specifically, initiatives that address the following interest areas:

- Base Protection
- Electromagnetic Bandwidth and Spectrum Enhancement
- Large Data Decision Aids
- Persistent Intelligence, Surveillance, and Reconnaissance (ISR)
- Alternative Energy, and Energy Efficiency and Reduction Technologies
- Newly Emerging National Threats
- Directed Energy Capabilities
- Low-Cost Precision Engagement Capabilities
- Operational Field Demonstrations
- Unmanned and Robotics Systems

FY 2011 and FY 2012 QRF plans will continue to identify and fund new projects that are best equipped to respond to critical operational needs and new technology opportunities. Current and future efforts that show significant effectiveness can be leveraged by additional investments in order to accelerate transition of capabilities.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

Starting in FY 2011, increased emphasis will be placed on maximizing the execution of QRF Projects in Government Integration Facilities (GIFs) within the Services, Federally Funded Research & Development Centers (FFRDCs), and National Laboratories. In particular, the QRF Program will seek to establish a Quick Reaction Community (QRC) made up of key GIFs. The QRC will focus on the execution of QRF Projects that require operational prototyping, experimentation, and demonstration in order to address critical needs identified in Joint Urgent Operational Needs Statements (JUONS), Urgent Operational Needs Statements (UONS), and Operational Needs Statements (ONS), with an emphasis on transitioning resultant capabilities to active Areas of Responsibility (AORs) as quickly as possible.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Black Dart 2010 ***Description:*** During Black Dart exercises in FY 2008 and FY 2009, the high energy laser (HEL) system successfully demonstrated the ability to spot and actively track Unmanned Aerial Vehicles (UAVs), Man Portable Air Defense Systems (MANPADS), and Rocket, Artillery and Mortar (RAM) targets. In addition, the HEL successfully negated multiple small tactical UAVs. This project (Black Dart 2010), will be executed by the US Air Force Research Laboratory (AFRL), and will build upon the success of the previous two years and focus on maximizing HEL fluency on targets, improving tracker algorithms for single, and swarming scenarios of UAVs, and prepare for connectivity to the Air Picture Situational Awareness at Black Dart exercises. The overall objective of this project is to increase tactical negation ranges of UAVs utilizing the HEL system with quicker response times against more representative targets. ***FY 2010 Accomplishments:*** The project completed and accomplished increased laser through-put and negation of UAVs at longer range with shorter dwell times at the FY 2010 Black Dart exercise. The results of this project show potential for negating harder targets such as RAM and MANPADS with higher power lasers. Demonstration of the system in more realistic conditions provided critical interface and system information. This project demonstrated a multi-function / multi-threat area protection system with speed of light engagement, infinite magazine, increased area coverage, reduced collateral damage, and persistent engagement.	0.750	-	-
Title: Energy Efficient Water Purification ***Description:*** The objective of this project, is to improve Humanitarian Assistance (also referred to as Capacity Building) and Disaster Relief (HA/DR) capabilities with respect to small unit and public water purification. ***FY 2010 Accomplishments:*** The project identified, demonstrated, and assessed multiple water purification systems during Crimson Viper 2010, which is a combined Thai-US military technology development exercise with warfighter participation. The payoff was a successful assessment and a recommendation of suitable and effective water purification technologies. The Project's study and assessment results and technology recommendations have been detailed in a report by the Pacific Command (PACOM) Science and Technology Office. This report along with the assessed water purification systems are available to DoD Pre-Positioned	0.350	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Expeditionary programs as well as Joint Capability Technology Demonstrations (JCTDs) projects related to energy and water purification.			
Title: Hostile Fire Identification (HFI) using the AAR-57, Common Missile Warning System (CMWS) ***Description:*** This project will provide a Hostile Fire (HF) detection capability through the Generation 3 Electronic Control Unit (ECU) scheduled for fielding on the existing Common Missile Warning Systems (CMWS) which is already installed on the US Special Operations Command (USSOCOM) MH-47G and MH-60M rotary wing aircraft. Small arms fire is the most prolific threat to Special Operations rotary-wing aviation, and no current capability exists to alert the aircrew to the presence of hostile fire directed at the aircraft. The proposed HFI capability will enable the aircrew to employ Tactics, Techniques, and Procedures (TTP) to evade or conduct counter-fire operations and will significantly improve aircrew and aircraft survivability and mission success. The initiative is in support of an urgent requirement for the USSOCOM validated Initial Capabilities Document (ICD) for a Hostile Fire Indication System (HFIS). This is a software solution provided to the 160th Special Operations Aviation Regiment (SOAR), with further benefit to regular Army forces. This project will not require airframe modifications, nor add weight to the aircraft. This project will leverage experience in software and testing. Specifically this project will focus on incorporating the software algorithms previously developed and refined for the new MWS Generation (Gen) 3 Electronic Control Unit (ECU) processor. ***FY 2010 Accomplishments:*** The contract was awarded and the project initiated. The majority of the project outputs will be produced in FY 2011. ***FY 2011 Plans:*** FY 2010 funding will continue to produce additional FY 2011 outcomes. At project completion, two fully operational Gen3 ECUs with User Data Modules (UDMs) and reprogramming accessories will be delivered to the Government. Additionally, HFI software algorithms, performance specifications, Software Version Description/Version Description Document (SVD/VDD), test plans/ reports, and live fire test reports will be delivered.	0.660	-	-
Title: Deployable Inflatable Satellite Antenna X-band and 1 Meter Variant ***Description:*** This project will deliver a refined and field prototype 1 meter class variant of the inflatable antenna technology for determination of applicability in the field. Additionally, it will complete the initial design, and field a prototype of an X-band tracking kit for inflatable antenna systems. The payoff to the government will be a reduced volume and weight antenna for rapid deployment of 1 meter class Satellite Communications (SATCOM) capability, and the ability to augment currently fielded inflatable antenna systems with tracking components to enable operation with inclined orbit satellites. ***FY 2010 Accomplishments:***	1.030	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 accomplishments include the generation of a project schedule, test plan, procedures, and initial design and development activities. Operational parameters from the implementation teams designated to field the 1 meter class antenna and tracking systems were generated. Procurement of required tooling and hardware to produce the initial prototype system was accomplished. Tests to obtain performance indicators for certification submissions to regulatory agencies was conducted. Final deliverable hardware components were manufactured and assembled, and electronics were integrated to test the refined system. The contractor integrated the system for final checkout and shipping, and generated unit-specific documentation and operator manuals. ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outputs. The contractor will ship the prototype 1-meter class antenna for implementation teams to conduct field training, and will retrofit a currently fielded system with X-band tracking components for field evaluation. The contractor will provide support to the fielded units, initiating rapid replacement or repair where required. The final two months of performance will consist of gathering data and providing the required final program briefing, and issuing an "after-action" report to prepare for commercialization and wide product release within DoD communications community.			
Title: Small-Base Leader Entry Control Point (ECP) Technologies Assessment CD ***Description:*** The objective of this project is to provide small-base leader quick practical guidance for small-base Entry Control Point (ECP) development and operation. Instruction material on the functional components of an effective ECP and the capabilities and limitations of technology solutions will be developed. Technology solutions will be determined through guidance from appropriate Program Managers (PMs) and Program Executive Officers (PEOs), and systems procured in response to Joint Urgent Operational Needs Statements (JUONS). The resultant product will contain two interactive user "exercises" consisting of scenarios that permit the user to test their understanding. The product will be provided in a Compact Disc/Digital video disc (CD/DVD) format. ***FY 2010 Accomplishments:*** Small-Base Leader Entry Control Point (ECP) Technologies Assessment CDs were completed, produced and made available for the User Assessment Groups/Services.	0.300	-	-
Title: Small-Base Leader Mission Planning/Training Compact Disc (CD) for Sensor Employment ***Description:*** The objective of this project is to develop and deliver Small-Base Leader mission planning training tools. Cerberus is a sensor integration architecture consisting of a detection assessment capability. Several variants have been configured and fielded to address a wide variety of perimeter security/border surveillance needs. Currently the U.S. Army and U.S. Marine Corps have fielded four of the variants. The systems are best employed along the ground, but can be used in mountainous regions and terrain as well. When used in mountainous terrain the users and commanders must have a thorough understanding of the	0.360	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
system capabilities and limitations. This training tool will educate the leaders and users of those capabilities and highlight optimal emplacement locations based on terrain and Cerberus variant configurations. This tool will enable better employment of sensor systems by creating awareness of capabilities and interactions of sensors with the terrain. The training CDs should be tailored in a manner that provides operator training, as well as leader training. Focus will be on the Cerberus Suite in Base Expeditionary Targeting and Surveillance System-Combined (BETSS-C), Cerberus Lite, and Ground Based Operational Surveillance System (GBOSS). ***FY 2010 Accomplishments:*** The project completed and delivered 5,000 CD based copies of the Computer Based Trainer.			
Title: Expeditionary Water Systems for the United States Marine Corps (USMC) ***Description:*** Water purification and distribution has become a logistical burden to deployed troops, relying mostly on bottled water. Potable water is available in most locations, but there are concerns with contamination and distribution. The USMC has established an experimental facility at the Marine Corps Base Quantico for evaluating water, energy and shelter devices and systems. This facility, called the Experimental Forward Operating Base (ExFOB), provides a simulated USMC Company-sized FOB environment suitable for demonstrating the operational efficacy of currently available products which could be deployed to support troops in theater. This project will support the water portion of the ExFOB. The project will also include the procurement of water purification and/or water packaging systems which support follow-on testing and acquisition of products. The ExFOB effort will be executed on an accelerated time schedule with the goal to find small expeditionary products and not duplicate water purification systems found on large bases. ***FY 2010 Accomplishments:*** The project was completed and the following delivered: • ExFOB final report including test data and evaluations of power, shelter, and water systems • Additional test reports detailing further evaluations of water systems • Procurement and deployment of water systems to theater • Safety Assessment and Safety Assessment Reports for each deployed water system • Training packages for deployed and deploying Marine Corps units • Extended User Evaluations with Marine Corps units • Transfer of information to the Pre-Positioned Expeditionary Assistance Kits Joint Capabilities Technologies Demonstration project.	0.650	-	-
Title: Adaptive Versatile Engine Technology (ADVENT) Engine Demonstration: Engine Low Spool Design Initiation and Critical Long Lead Hardware Procurement	7.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This project will engage near term critical activities necessary to enable an engine demonstration in early 2013. It will accelerate turbine engine research to fully align competitive ground engine demonstrators for future technology development and maturation. If implemented and fully developed, the advanced engine design offers the potential to increase F-35 radius by 30%, increase long range strike range / loiter envelop by 25%, enable long range/high speed capabilities in the 6th generation fighter aircraft, and significantly reduce tanker burden across the fleet. The activity supports DoD guidance on competitive prototyping. ***FY 2010 Accomplishments:*** Completed project delivered: fan vane design, specialized hardware, detailed rotor blisk drawings, and release forgings. Additionally, finalized forging drawings, critical core hardware forgings, mechanical systems, and outline of assembly & instrumentation processes were created.			
Title: Power Surety Task Force (PSTF) ***Description:*** The Power Surety Task Force (PSTF) was created to reduce the fossil fuel requirement within the Department of Defense (DoD) and was the operational arm for the Energy Security Task Force. This project provided funds for essential technical and engineering services to complete demonstration and installation of alternative energy saving measures at fixed, forward-deployed overseas locations, and to support stand-up of the newly authorized DoD Office of Operational Energy Plans and Programs (DOEP&P). The objective of the PSTF is to identify and demonstrate potential energy solutions and pursue procurement of prototypes from Commercial Off The Shelf (COTS) and Government Off The Shelf (GOTS) sources to assist DoD efforts to operationalize efficient structures and devices, intelligent power management, and alternative/ renewable power generation. The PSTF will assist DoD coordination efforts within the Energy Security Task Force to synthesize, coordinate, and report on programs/projects within the services that address platforms, futures, and installations in order to reduce the operational, economic and environmental vulnerabilities associated with the use and transportation of fossil fuels and other forms of non-renewable energy. ***FY 2010 Accomplishments:*** The project produced a final report delivered to the Departement of Energy (DOE). The PSTF worked with key DoD and interagency entities, working groups, and industry to define, highlight and address energy issues within DoD. The PSTF also worked with commands such as Central Command (CENTCOM) and Special Operations Command (SOCOM), Research and Development (R&D) commands, and Program Offices in order to determine technological solutions that could reduce the amount of fossil required by DoD. The PSTF set up processes to identify technology, integrate stakeholders, demonstrate solutions, and monitor lessons from deploying energy technologies into theater. The PSTF worked on individual projects such as the Tactical Hybrid Electrical Power System (THEPS) and Tactical Garbage to Energy Refinery (TGER), and then moved into larger	0.850	-	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
system-of-system approaches. The PSTF worked as the Technical Manager (TM) on the Net Zero+ (NZ+) Joint Capabilities Technology Demonstration (JCTD), which was a large-scale demonstration that addressed many of the integration issues that affected operational energy. The result of this effort became a test bed to evaluate technology that could make a difference in the amount of fuel consumed by DoD. Overall, the PSTF determined that the approach of demand reduction, systems engineering (such as micro grids, distributed power and demand response), and alternative renewable power is the correct approach to reduce the demand for fossil fuel. Demand reduction was highlighted as the quickest and most cost effective approach. As a direct result of the efforts of the PSTF, the Quick Reaction Fund (QRF) initiated an additional FY 2010 funded Project called Prototype Operational Warfare Energy Reduction and Efficiency demonstration (POWERED) to implement and demonstrate the Systems Engineering approach.			
Title: Helicopter ALert and Threat Termination (HALTT) (Rapid Insertion) ***Description:*** The objective of this project is to provide operational H-60 Blackhawk aircraft with the HALTT Hostile Fire (HF) detection and localization capabilities. HALTT HF leverages Defense Advanced Research Projects Agency (DARPA) developed acoustic detection technologies and consists of a microphone array system that detects all incoming bullets, warns the H-60 aircrews, and localizes the shooter(s). Funds are provided to DARPA to rapidly deploy 4 UH-60 helicopters equipped with the HALTT HF system into theater for an Extended User Evaluation. This initiative addresses two Army Hostile Fire Operational Needs Statements (ONSs). ***FY 2010 Accomplishments:*** This project resulted in the integration and test of HALTT systems onto UH-60 aircraft, ground and live fire tests, a Test Report, Rapid Insertion Deployment Plan, aircraft modifications, crew training, and shipment of integrated systems into theater. In addition, this effort led to full certification of HALTT-A for operational use by the US Army. ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outputs. The US Army G-3 Aviation (USA G-3 AVN) is currently working details of integrated UH-60 HALTT fielding in OEF for an operational user assessment with the 10th Mountain Division. The results of the overall effort will be provided to the Common Infrared Countermeasures Program of Record (CIRCM POR).	0.700	-	-
Title: Rapid Information Propagation & Planning for Lifelike Exercises (RIPPLE) Systems of Systems Support ***Description:*** An increasing number of combat training facilities ranging in size from small home stations to large combat training centers use the RIPPLE system as a foundation for Joint and coalition extensions to support effective training on interoperable systems. The intent of this project is to identify Systems of Systems (SoS) based engineering, management, and architecture principles to guide the evolution of RIPPLE in order to meet the objectives of training for modular, tactical-level Joint and coalition inter-operation.	0.100	-	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: This initiative produced a final report and resulted in close engagement and participation in Functional Capability Boards (FCBs) and Coalition coordination efforts to include: US Chair for Joint Fires bilateral with the United Kingdom (UK) on the Interoperability Commission; Technology Interoperability Lead on Digital Joint Close Air Support; Net Centric (NC), Battlespace Awareness (BA), and Command and Control (C2) FCB and Working Group.			
Title: SHIVA Phase 2 ***Description:*** Project Shiva is a wide area search, multi-intelligence fusion effort designed to locate likely home-made explosive (HME) manufacturing and Improvised Explosive Device (IED) related activity in areas of interest worldwide. The wide area search concept is further oriented on cueing other narrow focused sensors to more efficiently locate threat activities. Project Shiva requires no additional theater footprint, is rapidly adaptable, and can operate in denied airspace, worldwide. The resultant information is timely, precise, and when correlated with other systems, is intended to materially assist local combat commanders' ability to detect and destroy HME before it can be used as a weapon. Additional details of this effort are classified. ***FY 2010 Accomplishments:*** Required materials were purchased and fused with multi-intelligence data and then analyzed by Joint IED Defeat Organization (JIEDDO) to determine likely areas of HME activity. These locations were forwarded to the responsible theater decision maker for further analysis and dissemination and used to confirm/deny the derived locations. SHIVA completed an Operational Demonstration on 31 October 2010, which highlighted that targeting, tasking, and dissemination proved beneficial to the warfighter. The plan, in-process briefing materials and reports were completed. ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outcomes: The technical and final report are scheduled to be delivered in Q2 FY 2011. Additional algorithm work to improve the overall quality of the product is being planned.	0.540	-	-
Title: Windfarm Interference Negation Demonstration (WIND) ***Description:*** This project will provide for the development and demonstration of an adaptive clutter map algorithm to mitigate the false target detections resulting from wind farms within the Air Route Surveillance Radar (ARSR-3) radar coverage area. The algorithm will ensure that the number of uncorrelated detections resulting from wind turbines remains low and prevent the ARSR-3 from being desensitized. Initial testing will occur at the ARSR-3 Program Support Facility (PSF) radar at the Mike Monroney Aeronautical Center in Oklahoma City, followed by key site testing at the ARSR-3 site in the vicinity of the Fossil, Oregon windfarm area. This project will require the close coordination of a group of over ten US Government stakeholders including the Department of Defense (DoD), Federal Aviation Administration (FAA), and Department of Homeland Security (DHS).	0.540	-	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: The project identified scheduling points needed to ensure development of the adaptive clutter map algorithm prototype . ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outputs. An adaptive clutter map algorithm prototype will be developed and integrated onto an auxiliary processor, and then tested on the ARSR-3 PSF Test Radar. Briefings documenting the functional requirements, algorithm, site installation plan, and all testing results will be developed. Upon successful completion, the WIND system is targeted for transition to the US Air Force for further implementation.			
Title: Iron Crosshairs ***Description:*** This project will enhance the Defense Advanced Research Projects Agency (DARPA) Iron Curtain (IC) Active Protection System (APS) electronics in preparation for emplacement on a Mine Resistant Ambush Protected (MRAP) system for fielding. The IC APS was proven in a recent government live fire test and evaluation to be an effective system for addressing current and anticipated future Rocket Propelled Grenade (RPG) threats. The system is much more effective than currently employed approaches, and is expected to result in lower casualty rates and increased mission effectiveness for certain types of engagements. This technology addresses one of the highest ranked Joint Urgent Operational Needs Statement (JUONS). ***FY 2010 Accomplishments:*** The project generated Requirements and Interface Control Documents, preliminary electrical and mechanical design and fabrication activities, initial systems and safety analyses, and initial subsystems testing. ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outcomes. In support of the larger effort to integrate and field the IC APS onto an MRAP platform, the contractor will provide monthly reports, a project plan, an Iron Curtain Capabilities Document (CD), an Iron Curtain Phase 1 Design Document. Additionally, the Live-Fire technical test plan and the final report will be completed.	0.800	-	-
Title: S150 Fuel Cell ***Description:*** This project addresses the need for portable battery chargers sized for small squad operation, and will advance the state of technology of the S125 battery charging system to Technical Readiness Level (TRL) 7. This effort will culminate in a robust, lightweight system capable of charging military batteries from a liquid fuel source. The contractor will develop a 150 Watt portable generator based on solid oxide fuel cells. This generator will use hydro-treated renewable jet fuel or de-sulfurized JP8 as fuels and will be capable of operating as a battery charger or direct power unit. With a mass of less than 6 kg (14 lb), the battery charger-based system will fit within a backpack, save 60% of the weight of current solutions, and save more than 80% of the weight of primary batteries.	1.350	1.768	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Developed plans for the manufactoring, designing, and testing for the Solid Oxide Fuel Cell (SOFC) Systems needed to advance the state of technology of the S125 Battery Charging system to Technical Readiness Level (TRL) 7. ***FY 2011 Plans:*** The contractor will provide an initial milestone schedule within ten working days after receipt of order and a revised schedule within ten working days after notification of approval of the development strategy. Four Solid Oxide Fuel Cell (SOFC) Systems will be designed, manufactured, tested and delivered. The in-process reports and a final report will be completed.			
Title: Prototype Operations Warfare Energy Efficiency and Reduction Demonstration (POWERED) ***Description:*** This project will install and assess “microgrid” power distribution technology in Afghanistan Area Of Responsibility (AOR). This project will validate the utility of microgrids in a relevant Operational Environment, scientifically demonstrate reduction of DoD Fossil Fuel consumption, establish a verifiable business case analysis for microgrid technology, develop specifications for standardized microgrids, identify relevant standards/interfaces, and facilitate Logistics Civil Augmentation Program (LOGCAP) contract language for microgrid technology. ***FY 2010 Accomplishments:*** The project developed a progress schedule and identified key components needed from contract support. ***FY 2011 Plans:*** This project will be executed by the US Army (USA) Program Manager Mobile Electric Power (PM-MEP) in conjunction with the USA Research Development and Engineering Command (RDECOM) and selected support contractors. The following outputs will be produced : 1. Conduct Site Surveys in the Afghanistan AOR. 2. Installation and assessment of a 3 kilowatt (kW) hybrid system (integrated solar, generator and batteries), Tactical Modular Mobile Microgrid Power System (TM3PS), Electrical Power Conditioning and Control (EPCC), Heavy Expanded Mobility Tactical Truck (HEMTT) mounted hybrid system, and a 60 kW Tactical Quiet Generator (TQG) HI-Power based microgrid controllers 3. Integrate a one megawatt (MW) Microgrid into a Battalion-sized Forward Operating Base (FOB) and compare it in a 600 man Force Provider configuration. This will include the installation and assessment of technologies from the Joint Capabilities Technology Demonstration project titled Net Zero Plus (NZ+)	0.520	1.517	-
Title: MACY	0.840	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: MACY addresses the identification of asymmetric, low-tech airborne threats at a distance. This effort will provide the signatures of asymmetric, low-tech threat platforms as detected by select sensors, characterize the performance of those sensors, and support the development of a notional program to develop, integrate, test, and transition technology solutions. Further details of this project are classified. ***FY 2010 Accomplishments:*** MACY played an integral part in the development of a counter-threat capability. ***FY 2011 Plans:*** FY 2010 funds will continue to produce FY 2011 outputs. Air Force Research Laboratory (AFRL) will construct a demonstration detection system that will be tested against static and moving threat targets. Massachusetts Institute of Technology Lincoln Laboratories (MIT/LL) will explore Radar Signatures of the threats. The Naval Postgraduate School (NPS) will obtain and release multiple surrogate targets, acquire and analyze Light Detection and Ranging (LIDAR) data using two different LIDAR cameras for short and long range targets, and assess performance limits for detection approaches. NPS will generate a final report.			
Title: Ultra Short Pulse Laser (USPL) ***Description:*** This project will integrate, test and demonstrate an existing Government-owned Ultra Short Pulse Laser into an existing USPL test vehicle. The resultant system will prosecute the unique USPL susceptibility of Intelligence Surveillance and Reconnaissance (ISR) and Electro-Optic (EO) systems via associated physical effects generated by material interactions to include Radio frequency (RF), electro-Magnetic Pulse (EMP), and white light super-continuum generation. This USPL Test Asset System (UTAS) will have the unique potential to develop into defensive and offensive weapons against multimode guided systems. ***FY 2010 Accomplishments:*** The project was initiated and identified periods of performance, test, and demonstration plans for the Ultra Short Pulse Laser (USPL) test vehicle. ***FY 2011 Plans:*** This project, under the leadership of Naval Sea Systems Command Program Manager Ships 405 (PMS-405), will be executed by a consortium of contributors. This effort will involve the design, engineering, development, integration, testing and field demonstration of the UTAS. Efforts will include the generation of a Maritime USPL Test Plan, installation and verification of data collection equipment, testing in maritime environment, complete maritime characterization, preparation of the UTAS Mobile	0.549	1.500	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Vehicle, installation of the USPL, and final testing. Documentation will be delivered and include UTAS design and operation documents, along with the final report.			
Title: Explosive Ordinance Disposal (EOD) Disruptor Technologies ***Description:*** This project will directly address Explosive Ordinance Disposal (EOD) Joint Urgent Operational Needs Statement (JUONS) CC-0407. This effort will complete development, modification, integration, and testing EOD disruption technologies to be used EOD robotic systems. ***FY 2010 Accomplishments:*** The project developed and prepared EOD disruption technologies for integration and testing in EOD robotic systems. ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outcomes. The contractor will test EOD disruption technologies, design and implement modifications, and integrate and test the technologies with EOD robotic systems.	0.300	-	-
Title: Digital Rocket Launcher (DRL) ***Description:*** This project will directly address a key component of an overall offensive weapon system solution to the U.S. Naval Forces Central Command (NAVCENT) Urgent Operational Need Statement (UONS) for Counter Swarm of Fast Attack Craft/ Fast Inshore Attack Craft (FAC/FIAC). A Digital Rocket Launcher (DRL) is necessary to accommodate new generation, longer, precision-guided, 2.75 inch rockets such as the Low Cost Guided Imaging Rocket (LOGIR), and the Advanced Precision Kill Weapon System (APKWS). This project is a low-risk effort to quickly design, develop, manufacture, integrate and demonstrate a 16-tube DRL, and will be executed in-house by the Naval Air Warfare Center Weapons Division (NAWCWD) China Lake. When complete, the DRL will be utilized by the Medussa Joint Capabilities Technology Demonstration (JCTD) project in order to advance its Technology Readiness Level (TRL), reduce its technical risk, and to accelerate its transition to fielding. The combination of Medussa and DRL will provide a low-cost, fire & forget, guided weapon system, capable of striking from increased safe distances. This will result in increased number of targets killed in available time, a greatly reduced cost per kill, and a significant reduction in Warfighter risk. ***FY 2010 Accomplishments:*** The project was initiated and identified periods of performance, test, and demonstration plans for a A Digital Rocket Launcher (DRL) . ***FY 2011 Plans:***	0.540	2.500	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
NAWCWD China Lake will use existing conventional 2.75 inch LAU-61 Rocket Launchers, and design, develop, integrate and demonstrate a 16-tube DRL sufficient to accommodate LOGIR, APKWS, and conventional 2.75 inch rocket systems. Two 16-tube DRLs will be produced, tested and demonstrated with the Medussa JCTD.			
Title: Electromagnetic Bandwidth and Spectrum Enhancement (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal areas for FY 2011 and FY 2012 QRF Electromagnetic Bandwidth and Spectrum Enhancement new project starts include efforts to develop capabilities in anticipation of emerging needs to include: technologies to reduce prime power, weight and space of RF components, increased level of integration of related components. In addition, projects will include novel bandwidth compression techniques with emphasis on on-board data processing and reduction technologies. Rapid Reaction Technology Offense (RRTO) will ensure QRF efforts are not duplicative with other Electromagnetic Bandwidth and Spectrum Enhancement efforts and will seek to leverage other such efforts. ***FY 2011 Plans:*** QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, Federally Funded Research and Development Centers (FFRDCs), other government agencies, industry and academia will help identify areas critical to developing future Electromagnetic Bandwidth and Spectrum Enhancement efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to developing future Electromagnetic Bandwidth and Spectrum Enhancement efforts.	-	4.711	4.148
Title: Alternative Energy, and Energy Efficiency and Reduction Technologies (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal areas for FY 2011 and FY 2012 QRF Alternative Energy, and Energy Efficiency and Reduction Technologies new project starts include efforts to develop capabilities in anticipation of emerging needs to include: technologies to reduce consumption of fossil fuels and increase energy efficiency within forward deployed operating units. Emphasis will be on the integration and demonstration of technologies that directly reduce the overall cost and logistics footprint of fossil fuel sourced energy within forward deployed units. RRTO will ensure QRF efforts are not duplicative with other Alternative Energy and Energy Efficiency and Reduction Technologies efforts and will seek to leverage other such efforts. ***FY 2011 Plans:***	-	3.516	4.147

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to developing future Alternative Energy, and Energy Efficiency and Reduction Technologies efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to developing future Alternative Energy, and Energy Efficiency and Reduction Technologies efforts.			
Title: QRF FY 2011 and FY 2012 New Start Focal Area Plans - Newly Emerging National Threats ***Description:*** Focal areas for FY 2011 and FY 2012 QRF Newly Emerging National Threats new project starts include efforts to develop capabilities in anticipation of emerging needs to include: technologies to address unusual needs and capability gaps directly affecting the combined missions of DoD and other government agencies. Included in these efforts are projects requiring significant cross-agency coordination. RRTO will ensure QRF efforts are not duplicative with other developing Newly Emerging National Threats efforts and will seek to leverage other such efforts. ***FY 2011 Plans:*** QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, Federally Funded Research and Development Centers (FFRDCs), other government agencies, industry and academia will help identify areas critical to developing Newly Emerging National Threats efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to developing Newly Emerging National Threats efforts.	-	3.516	4.147
Title: Directed Energy Capabilities (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal areas for FY 2011 and FY 2012 QRF Directed Energy Capabilities new project starts include efforts to develop capabilities in anticipation of emerging needs to include: technologies to counter threats with speed-of-light, precision, deep	-	3.517	4.147

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
magazine, and low collateral engagement modalities. Emphasis will be on Laser engagement technologies to include Short Pulse, Ultra Short Pulse, and High Energy Laser technologies integrated and demonstrated on tactical manned and unmanned vehicles with Joint mission applicability. Rapid Reaction Technology Office (RRTO) will ensure QRF efforts are not duplicative with other Directed Energy Capabilities efforts and will seek to leverage other such efforts. ***FY 2011 Plans:*** QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to Directed Energy Capabilities efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to Directed Energy Capabilities efforts.			
Title: Low Cost Precision Engagement Capabilities (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 QRF Low Cost Precision Engagement Capabilities new project starts include efforts to develop capabilities in anticipation of emerging needs to include: technologies to address the need for low cost precision engagement systems applicable to small, tactical, manned and unmanned systems. Emphasis will be on modification and enhancement of conventional munitions components and systems. RRTO will ensure QRF efforts are not duplicative with other Low Cost Precision Engagement Capabilities efforts and will seek to leverage other such efforts. ***FY 2011 Plans:*** QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, Federally Funded Research and Development Centers (FFRDCs), other government agencies, industry and academia will help identify areas critical to Low Cost Precision Engagement Capabilities efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations	-	3.516	4.147

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to Low Cost Precision Engagement Capabilities efforts.			
Title: Operational Field Demonstrations (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 QRF Operational Field Demonstrations new project starts include efforts to develop capabilities in anticipation of emerging needs to include: operational prototyping and field demonstration of technologies, components and fully integrated systems in direct response to critical operational needs. Emphasis will be on demonstration of conventional technologies with transition within a period of no more than one year. RRTO will ensure QRF efforts are not duplicative with other Operational Field Demonstrations efforts and will seek to leverage other such efforts. ***FY 2011 Plans:*** QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, Federally Funded Research and Development Centers (FFRDCs), other government agencies, industry and academia will help identify areas critical Operational Field Demonstrations efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical Operational Field Demonstrations efforts.	-	3.516	4.147
Accomplishments/Planned Programs Subtotals	19.229	29.577	24.883

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Utilizing FY 2010 funds, the QRF Program provided funding to 13 unique projects in FY 2010, six (6) unique projects in FY 2011, and approximately three (3) more projects to be added during FY 2011. Although each project is unique, all QRF projects were/are monitored for schedule deviation and transition outcome, as well as for meeting reporting requirements such as periodic status reports, quad charts, financial reporting, and briefing materials. Additionally, some projects were/are monitored for the delivery of additional deliverables such as test reports, studies, components, and equipment as well. Generic performance metrics applicable to

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P826: *Quick Reaction Fund*

the Quick Reaction Fund (QRF) includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on war-fighting needs" and the metrics for this objective is to transition 30% of completing demonstrations program per year. During FY 2010 the QRF achieved a transition rate of approximately 70% and exceeded the objective of 30%.

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P828: *Rapid Reaction Fund*	51.138	48.667	48.486	-	48.486	59.885	53.091	54.425	57.085	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Quick Reaction Special Projects Program (QRSP) (Program Element 0603826D8Z) supports six separate projects that provide rapid funding to expedite the development and transition of new technologies or initiatives that support the warfighter.

The Rapid Reaction Fund (RRF) is fully executed through the Combating Terrorism Technology Task Force (CTTTF), which was re-designated as the Rapid Reaction Technology Office (RRTO). The CTTTF was stood up to provide rapid response to enhance operations in Iraq, Afghanistan and other theaters in support of Overseas Contingency Operations (OCO); and, to accelerate the transition of high-potential science and technology projects into operationally useful products in the execution years. CTTTF/RRTO leverages the Department of Defense (DoD) science and technology base and those of the other Federal Departments; stimulates interagency coordination and cooperation; accelerates the fielding of capabilities and concepts to counter emerging threats; and, provides feedback to the Science & Technology (S&T) community to guide long term developmental strategies. RRTO anticipates adversaries' exploitation of technology, including available and advanced commercial capabilities. In prior years RRTO has explored methods and approaches of persistent surveillance stimulation for counterinsurgency; developed alternate power sources for sensors and systems; expanded human, social and cultural knowledge, increased small unit situational awareness, advanced the interface between law enforcement and military operations, developed biometrics and forensics capabilities, supported denied area operations, strategic multi-layer assessment and established an Open Business Cell that is facilitating better interactions with small innovative companies that do not normally do business with the DoD. In FY 2011 and FY 2012, RRTO will continue to explore new and emerging capabilities to support Irregular Warfare operations while working to support Under Secretary of Defense (Advanced Technology & Logistics) (USD (AT&L)) and Director, Defense Research & Engineering (DDR&E) goals. With final project selection occurring during the execution year, potential areas for FY 2011 and FY 2012 Rapid Reaction Technology Office (RRTO) projects include: Forward Operating Base (FOB) protection, persistent surveillance, Intelligence, Surveillance, and Reconnaissance (ISR) architecture, interface of law enforcement and military operations, biometrics and forensics, autonomous operations, cyber security, explore new and emerging cell phone technologies, support border patrol initiatives, counter proliferation initiatives, capabilities to exploit denied areas, strategic communications and multi-layer assessments and nontraditional approaches to leverage innovative businesses. The average length of a Rapid Reaction Technology Office project falls within a 6-12 month range in order to more effectively aid the Warfighter.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Accelerated Nuclear Deoxyribonucleic Acid (DNA) Equipment (ANDE)	0.700	-	-
Description: The field-deployable ANDE program is a technology development effort enabling automated rapid DNA profiling, while minimizing analytical complexity and user manipulations, for battlefield biometrics and forensics applications. The prototypes will enable warfighters without technical training to generate and match DNA profiles directly from buccal swab reference samples in approximately 1 hour. Rapid DNA profile matching will allow commanders to make actionable decisions concerning the release or detainment of persons of interest. This effort is also supported by the Biometrics Science & Technology			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
(S&T) Program Element with a consortium of other U.S. Government sponsors (Defense Threat Reduction Agency, Federal Bureau of Investigation, and Department of Homeland Security) committing funding at $18.600 million for the program. ***FY 2010 Accomplishments:*** Developed a Risk Reduction Plan, conducted first and second quarter reviews, demonstrated individual module integration and conducted the Preliminary Design Review. ***FY 2011 Plans:*** FY 2010 funds will continue to produce additional deliverables in FY 2011. In FY 2011 this project will conduct the Critical Design Review, conduct the System Acceptance Test and deliver one prototype to the Defense Biometrics Program Office for an operational evaluation.			
Title: Maritime Media Collection ***Description:*** This project, in support of maritime boarding parties, will develop hardware, software, and concept of employment for the collection of data from digital devices (e.g. Personal Digital Assistants (PDAs), cell phones and computers). The device produces output that meets the data requirements for the Office of Naval Intelligence's SeaPort database , improves interoperability; and, using communications systems, provides rich data to the intelligence community for rapid analysis and exploitation. Quick return of the results to maritime boarding parties enables them to take swift action against our adversaries. ***FY 2010 Accomplishments:*** A completed prototype device was delivered to the Navy along with source code, users manual and a Concept of Operations (CONOPS).	0.175	-	-
Title: Free-Space Optical Communication Atmospheric Link (FOCAL) for Multi-Aperture Sparse Imager Video System (MASIVS) ***Description:*** Building on this successful flight demonstration in Sep-Oct 2009, the Free-Space Optical Communication Atmospheric Link (FOCAL) will make improvements necessary for deployment, namely increased bandwidth to 10 Gbps and reduced size, weight, and power (SWaP). The initial flight demonstration is at Empire Challenge 2010 where FOCAL will integrate with the MASIVS. Further FOCAL development is planned for FY 2011 with development of a prototype suitable for deployment. ***FY 2010 Accomplishments:*** Developed a mobile ground station and integrated and demonstrated MASIVS with FOCAL on one aircraft for Empire Challenge 2010. The FOCAL capability will be integrated on long endurance ISR platforms that require high bandwidth downlinks.	1.500	-	-
Title: Submerged Launch System for a Fuel Cell Powered Long Endurance Expendable Unmanned Aerial System (UAS) for ISR	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The Naval Research Laboratory will develop a Fuel Cell Powered Long Endurance UAS for ISR. The project will develop a submerged launch capability for the UAS. ***FY 2010 Accomplishments:*** This project integrated a novel Unmanned Aerial vehicle (UAV) into a standard submarine launch canister to provide the Navy an extended reach ISR asset equipped with a high quality real-time video. Conducted in close coordination with Navy operational users the capability will transition after successful flight demonstrations. Flight demonstrations are planned to occur in FY 2011.			
Title: Blue Dart 2 ***Description:*** This project is a focused experiment exploring the asymmetric attack threat posed by unmanned maritime systems (UMS) built using publicly available information and low cost, commercial-off-the-shelf (COTS) components. Independent red teams consisting of college students with little or no maritime experience were sponsored in order to demonstrate the capability of educated, motivated individuals to design and develop UMS homemade devices to meet specific mission profiles. The program culminated in a maritime field demonstration with the UMS red teams engaging countermeasure system blue teams. ***FY 2010 Accomplishments:*** The Blue Dart 2 joint-DoD field demonstration was held April 21, 2010 in Key West, FL. The results of the demonstration have helped inform the Navy and intelligence communities on maritime force protection gaps.	0.500	-	-
Title: Tactical Operational Foliage Penetrating (FOPEN) Laser Imaging Detection and Ranging (LIDAR) Extension ***Description:*** This project provides incremental funding to support a Naval Sea Systems Command (NAVSEA) task providing sensor design and prototyping, test and evaluation, and analysis of technologies and systems for warfighters. This project accelerates and enhances the results and post mission analysis from the Guidelight Foliage Penetration system effort that was operationally demonstrated in dense jungle canopies in the Philippines. ***FY 2010 Accomplishments:*** Provided near-term analysis and assessment of the FOPEN LIDAR data and a transition plan for operationalization within ARMY G2 and US Special Operations Command (SOCOM). Systems are scheduled to deploy to Afghanistan in FY 2011.	0.100	-	-
Title: Counter Swarm Tactics ***Description:*** Speed limitations, inertia and lack of maneuverability make US Navy ships vulnerable to attacks by swarms of smaller, faster, and potentially heavily armed boats. In order to disrupt a swarm attack and buy itself time to address the multiple threats, a commander needs to resort to non-traditional tactics to disrupt the implicit coordination mechanisms that underlie swarm	0.300	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
attacks. This effort will build a computer simulation model of asymmetric naval swarm tactics, and use it to design and test counter-tactics to disrupt swarm attacks. ***FY 2010 Accomplishments:*** The project demonstrated the feasibility of using a small group of Unmanned Surface Vehicles (USVs) to disrupt asymmetric swarm tactics with the payoff being the ability to deal successfully with the increasing asymmetric threat that swarms of speed boats represent.			
Title: Stiletto Project ***Description:*** Stiletto is a high speed maritime vessel with a robust "electronic keel" and space to host new technologies. The vessel was developed to provide DoD a dedicated maritime Research & Development (R&D) platform. As a non-program of record, Stiletto streamlines the experimental process and helps facilitate the rapid testing and exploration of emerging technologies. This effort will provide upgrades and additions to the Stiletto effort. ***FY 2010 Accomplishments:*** Accomplished an upgrade to Stiletto's electronic keel and communications suite, supported approximately 120 days of underway experimentation and demonstrated numerous new technologies during maritime operations. Several of these technologies have transitioned to operational users.	0.600	-	-
Title: Hydrogen Power Unit ***Description:*** The Hydrogen Power Unit (HPU) is a self-contained, stackable electrical generation system powered by a water-based, non-flammable, non-explosive and non-toxic Liquid Safety Fuel (LSF). The system operates by extracting hydrogen gas from the LSF. Hydrogen is delivered 'on-demand' directly into integrated fuel cell(s) for real-time, immediate use. LSF is made from water and a proprietary additive. LSF can be made at the point of use or at a central location. ***FY 2010 Accomplishments:*** Executed in coordination with Central Command (CENTCOM) the project demonstrated a prototype HPU in late FY 2010. A multiservice technical evaluation team is assessing the results of the demonstration.	0.500	-	-
Title: Open Business Cell Idea Management System ***Description:*** The objective of the Open Business Cell (OBC) (online at DefenseSolutions.gov) is to reach out to small innovative companies, especially those that have no experience dealing with the Department of Defense, to identify potential solutions to military needs. The OBC uses the Idea Management System (IMS) software tool to collect, distribute, track, evaluate, and store all ideas submitted to the DefenseSolutions.gov website.	0.200	0.150	0.534

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: This effort allowed for continuous operation of the DefenseSolutions.gov website and the Idea Management System as in excess of 100 submitted proposals were reviewed and selected for implementation. ***FY 2011 Plans:*** The Idea Management System will complete its second capability upgrade and will continue to support OBC efforts to engage non-traditional businesses. It processes all ideas and proposals submitted through the DefenseSolutions.gov website. In FY 2011, more than 200 submitted ideas and proposals will be received and processed through this system, leading to five awards for prototyping and solutions. ***FY 2012 Plans:*** Funding will maintain the IMS software and provide for enhancements requested by users in the future and selection of 2012 projects supporting Battlefield Forensics and the Joint Non-lethal Weapons Directorate.			
Title: Advanced Imaging and Multifunction Sensing System (AIMS) ***Description:*** This effort will develop an advanced multifunction sensor that can provide revolutionary sensing and imaging capability. The proposed effort significantly expands the capability of current systems by adapting and applying recent advances in ultra-wideband optical waveform technology and developing new device technologies to greatly expand the operational utility of Laser Detection & Ranging systems. ***FY 2010 Accomplishments:*** Fabricated an advanced sensor that was demonstrated in a short-range (< 100 m) building-to-ground experiment. Work in FY2011 will integrate and demonstrate the capability on an airborne platform. ***FY 2011 Plans:*** Integrate the system aboard a manned aircraft and demonstrate the capability at tactically significant ranges.	1.250	0.700	-
Title: Non-Lethal Vehicle Stopping ***Description:*** Vehicle borne Improvised Explosive Devises IEDs (VBIED) are a significant threat to operational forces. Being able to stop a potential VBIED without harming passengers is a critical joint warfighting need. The RRF in coordination with DoD Joint Non-Lethal Weapons Directorate (JNWD) sought innovative solutions from companies that do not typically do business with DoD. The focus of this effort is develop methods to stop potentially hostile medium size vehicles (trucks) from approaching friendly forces in convoys and at checkpoints. ***FY 2010 Accomplishments:***	0.750	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
From among the ideas received, eight proposals reviewed by JNLWD subject matter experts, were selected for funding. These projects were started in late FY 2010 and will produce prototypes in late FY 2011/early FY 2012.			
Title: Strategic Multi-Layer Assessment (SMA) Effort ***Description:*** This effort will expand Rich Contextual Understanding (RCU) support to International Security and Assistance Forces (ISAF) in Afghanistan by providing additional RCU materials (e.g., district, issue assessments), on-demand Quick Look Reports (QLRs), an enhanced RCU-visualization tool and an integrated, rigorous framework for metrics design, data exploitation and statistical analyses to monitor and assess progress on ISAF objectives. ISAF requires an RCU of forces for conflict and for peace in the Afghanistan-Pakistan area of operation (AOR). ***FY 2010 Accomplishments:*** Conducted in close coordination with ISAF leadership the project responded to an ISAF requirement with a two track approach. One track developed an integrated, rigorous framework for collecting, monitoring and analyzing progress on ISAF objectives. The second track provided support to the ISAF host nation information requirements team with additional RCU materials (e.g., district, issue assessments) for 48 districts, on-demand Quick Looks via the RCU team network and an enhanced RCU data visualization tool in a collaborative environment.	1.700	-	-
Title: Rapid Reaction Technology Office (RRTO) Technology Assessments at Yuma Proving Grounds (YPG) ***Description:*** The Joint Experimental Range Complex (JERC) is a remote test site located at the Yuma Proving Grounds that is designed to rapidly test prototype technologies. These limited proof-of-concept tests allow for integration and development of Intelligence, Surveillance, and Reconnaissance (ISR), training, and Concept of Operation (CONOPS) development. Since its establishment in late 2003, RRTO has sponsored evaluation of more than 250 systems at the JERC. This funding will be utilized to provide emergent ugrades and capabilities to the site. ***FY 2010 Accomplishments:*** This effort provided the facility and manning to assess new force protection technologies and CONOPS. The support included development of project test plans, execution of the tests, evaluation of collected data and preparation of post test reports. The post test reports have been distributed to government and appropriate industry representatives. ***FY 2011 Plans:*** Continue to sponsor 5 to 6 two week evaluation periods a year for interested industry and government representatives to test emerging capabilities in a realistic desert environment. Use the results of these evaluations to inform the development/ procurement process for future enhanced capabilities. ***FY 2012 Plans:***	9.600	1.780	1.780

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Continuation of the 5 to 6 two week evaluation periods ayear for interested industry and government representatives to test emerging capabilities in a realistic desert environment. Use the results of these evaluations to inform the development/ procurement process for future enhanced capabilities.			
Title: Assessment of Foreign Unmanned Underwater Technologies (Project: Nautilus) ***Description:*** The effort will be utilized to perform a technology survey and future threat assessment into foreign-based unmanned underwater technology that could enable High Endurance Unmanned Underwater Vehicle systems (HEUUV). ***FY 2010 Accomplishments:*** This project provided input to the vulnerability of U.S maritime interests and a foundation for the development of countermeasure solutions to HEUUV underwater threats. The classified study has been distributed to Navy personnel and is informing decision makers on focus areas to counter the future HEUUV threat.	0.200	-	-
Title: Transitioning From Counterinsurgency to Lesser Forms of Engagement ***Description:*** This effort will provide recommendations on the procedures and capabilities required to successfully transition from counterinsurgency (COIN) operations to some lower level of conflict, to include police-led operations, peacekeeping and/or the training and equipping of local forces. The results will identify specific science and technology areas that could potentially support and enhance the transition from counterinsurgency operations to a lower level of conflict. ***FY 2010 Accomplishments:*** The research identified procedures for the Department of Defense (DoD) and other U.S. government agencies to transition successfully from COIN to sustained stability operations. The data has been used by decision makers working to transition from COIN operations.	0.400	-	-
Title: Building Effective Institutions Pilot Project ***Description:*** This project enhances the military understanding of and ability to support the task of building effective states. The effort will provid an operational framework for approaching countries and regions facing instability; utilizing an existing framework consisting of ten interrelated functions and expanded the framework to include providing relief in disasters and transitional justice. ***FY 2010 Accomplishments:*** Conducted in coordination with Department of State (DoS) and United States Agency for International Development (USAID), the project delivered a proof of concept for the practical implementation of the existing Institute for State Effectiveness (ISE)	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
framework in any United States Government (USG) entity, developed practical tools for country specific strategic plans and delivered an actionable plan to be implemented by U.S. country teams.			
Title: Afghan Counter Insurgency (COIN) Web Portal ***Description:*** The project allowed the expansion and development of materials to include more detailed tribal maps, provincial and district summaries, political and tribal leadership profiles, and security analysis reports. The development work provided relevant research in support of current COIN and reconstruction programs in Afghanistan. ***FY 2010 Accomplishments:*** This project expanded and developed ongoing research and dissemination of socio-cultural / human terrain information on Afghanistan via an open-source web portal. It provided comprehensive assessments of tribal and clan networks in coordination with ongoing COIN operations and needs. The web portal is used by U.S., NATO ISAF and non-governmental organizations in Afghanistan.	0.100	-	-
Title: Emerging Explosives Threat Database Tool ***Description:*** The global threat of homemade explosives (HME) continues to grow. The project funding will be utilized to identify and document emerging energetic material information from one specific region of interest. The database identifies threat vs. non-threat material and their characteristics and is a reference for various U.S and NATO users. ***FY 2010 Accomplishments:*** Provided a technical assessment of open source energetic material information that provides valuable data regarding potential emerging threats. Data is being used by the Services, and Joint Improvised Explosive Device Defeat Organization (JIEDDO).	0.600	-	-
Title: Covert Modulating Retroreflector (CMR) for High Speed Asymmetric Lasercom ***Description:*** This effort is providing a high speed covert data link capable of transmitting live, high quality video and other data. This program builds on the successes of previous RRF modulating retroreflector lasercomm efforts and will incorporate the downlink capability aboard a small UAV. ***FY 2010 Accomplishments:*** Completed a successful demonstration of a high-speed CMR with pointing feedback on an airborne platform. The FY 2010 funding will allow the integration of the capability aboard a UAV in FY2011.	0.420	-	-
Title: Applications of Analytical Tools for Counter-Terror Social Network Analysis and Intent Recognition (AAT for CT-SNAIR) on International Crime and Terrorism Data	0.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This project will extend the advancement and application of the predictive analytics using additional data sources with a more strategic problem set. The project objective is to improve the ability of the decision maker to understand the complex relationship between regional political or economic issues and criminal and/or terrorist activity. By correlating across disparate data sets, historical data can be used to model and predict future areas of increased criminal or terrorist activity. ***FY 2010 Accomplishments:*** The system was demonstrated on a more complete data set covering an entire region of interest and encompassing multiple strategic variables. An initial technology transition of the graphical and prediction tools and techniques to selected intelligence community users including Joint Inter-Agency Task Force (JIATF), Electronic Privacy Information Center (EPIC), and National Security Agency (NSA) was completed.			
Title: Hostile Fire Detection System (HFDS) – High Speed ***Description:*** This is a high speed infrared imaging system designed to identify the location of a small arms shooter. This technology is a significant improvement over current technologies because it provides a 360 degree field of view and a high frame rate (10,000 frames/second) detector. The high frame rate has been shown experimentally to reduce the number of false positives. This project is a follow on effort to the first HFDS proof of concept effort and will provide initial test units for firing range testing, with a proposed follow on hardened prototype fielding into the Afghanistan and/or Southern Command (SOUTHCOM) theaters. ***FY 2010 Accomplishments:*** This effort has delivered 2 range experimentation units for user evaluation and the design for a hardened prototype. ***FY 2011 Plans:*** After successful user evaluation of the experimental units, the project will develop a hardened prototype for an operational demonstration.	1.100	0.310	-
Title: PHOSPHOR ***Description:*** This project will address the problem of increasingly sophisticated communications protocols being used against Blue Forces. Through development of a better understanding of emerging communications standards and protocols and developing tools to take best advantage of these changes, this project will provid DoD the technical underpinnings required to address the evolving communications environment. Details of the outcomes of this research are classified. ***FY 2010 Accomplishments:***	0.900	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
This effort proposed sensor modifications and provided a proof of concept validation. Further details relating to the outcomes of this effort are classified.			
Title: Thunderstorm Program Support ***Description:*** This project will address the FY 2010 Massachusetts Institute of Technology (MIT) Lincoln Laboratory support for the ongoing Thunderstorm exercise effort. This support will consist of test planning and spiral execution to ensure that Thunderstorm proceeded with quantitative rigor and integrated data architecture. The project will ensure that the exercise spiral development is consistent within an overall framework and develop refined exploitation algorithms. The results will feed into the operations infrastructure. ***FY 2010 Accomplishments:*** This effort delivered an integrated test plan and exploitation algorithms for Thunderstorm exercise Spirals 3 and 4. Data discovered during the Thunderstorm spirals has informed operational decision makers in Joint Inter-Agency Task Force, South (JIATF-S) and has been widely distributed to government users.	1.500	-	-
Title: Wide Area Chemical Sensing ***Description:*** Massachusetts Institute of Technology (MIT) Lincoln Laboratory and the United States Air Force Academy will continue to the development of a chemical sensing system that enables the detection and mapping of atmospheric chemical effluents over large geographic areas at high spatial-resolution and high-sensitivity. ***FY 2010 Accomplishments:*** A building to building hardware demonstration was completed and flight ready hardware was delivered and transferred to another government sponsor. ***FY 2011 Plans:*** Development of the pointing mirror control system, flight readiness review, air-to-ground local demonstration and remote field test of the completed system.	1.250	1.250	-
Title: Multimodal Analysis ***Description:*** The objective of this effort is to enable Central Command's (CENTCOM) cells to identify, standardize, and integrate variable and unstructured data so that modeling and simulation (M&S) tools could be applied to support the ISAF requirements for understanding complex human behavior in real time. ***FY 2010 Accomplishments:***	0.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Delivered a prototype Model for the Emergence of Insurgent Leaders (MEIL) tool to CENTCOM cells that can anticipate the rise of new insurgent leaders.			
Title: Project Saiph ***Description:*** This project will apply advanced decision concepts to more comprehensively exploit non-traditional data sets and communities of interest to establish a strategic level methodology for narrowing the area of military concern. This research effort will focus on identifying patterns in events with respect to distance to infrastructure features such as road types, buildings, bridges, market places, as well as cultural features such as tribal and ethnic boundaries. These patterns are available to provide a beginning point for informed strategic planning in an ever-evolving, complex combat environment. ***FY 2010 Accomplishments:*** Explored the contributions of non-traditional data sources, techniques, methodologies, and tools to provide insight for the commander's decision process. Embedded in the research was an effort to integrate exploitation of the social sciences (i.e., the social, economic, political, and cultural domains) within a spatial framework. Physical/demographic geospatial and cultural factors were examined to develop advanced thinking and non-conventional models, methodologies, and tools focused on the defeat of illicit trafficking supported by criminal networks in the SOUTHCOM area of responsibility.	0.600	-	-
Title: Tracking Illicit Networks and Linkages Facilitating Jihadist Terrorist Attacks Using New Methods of Analysis & Communication ***Description:*** This project is a collaborative research effort involving the Institute for the Study of Violent Groups (ISVG) and Midshipmen at the United States Naval Academy who will study patterns of interaction and communication among various types of illicit networks operating within and across U.S. boundaries. The results of these analyses will be summarized and linked to earlier studies in an existing semantic wiki data base at the U.S. Naval Academy that is designed to track transnational Jihadist terrorist activities worldwide. ***FY 2010 Accomplishments:*** This project provided junior naval officers, with a wealth of new analytical skills and knowledge about real and potential links among criminal and jihadist networks. These skills will be very helpful as the Midshipmen begin their naval careers. Information from this program is supporting formal open source intelligence on terrorist and criminal activity.	0.120	-	-
Title: Winning in Afghanistan ***Description:*** This effort will develop a comprehensive framework to help understand the dynamics of war and politics in Afghanistan, and a range of options to achieve objectives in this region effectively and efficiently.	0.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: This project produced an independent study that offers a potential way ahead for the United States in Afghanistan. The study will be on the Leadership of the ISAF in Afghanistan and be using the study to inform their decision making.			
Title: Enhancing Inter-Agency Collaboration Capabilities for Stability Operations through Synthetic Environments for National Security Estimates (SENSE) ***Description:*** SENSE serves to focus a diverse set of players (inter-agency, international, etc.) on a problem whose successful management requires establishing chains of collaboration across agency seams and with non-US Government (USG) protagonists. This effort will facilitate the development and deployment of training environments for interagency/international collaboration based upon a new iteration of SENSE technology that models the political, security, economic and cultural conditions of Afghanistan. ***FY 2010 Accomplishments:*** This most recent iteration of SENSE was made operational via seven separate simulations. An impact evaluation of the SENSE training on participants was delivered.	0.500	-	-
Title: Collaborative Graph Building ***Description:*** The project will continue the development of a set of tools to improve the ability of analysts to rapidly construct large relationship graphs. Exploitation of large graphs is critical to a variety of intelligence applications including social network analysis, pattern of life estimation and anomalous activity detection. ***FY 2010 Accomplishments:*** The project developed algorithms to automate the extraction of graph elements such as named entities (people, places, events, etc.) and relationships from large repositories of intelligence reports. A baseline search capability for automatically extracted graph element, graph refinement tools and an objective graph-driven search capability was implemented with this effort.	0.500	-	-
Title: Force Directed Layout (FDL) Research and Engineering for Social Network Analysis ***Description:*** This project will develop and test, with service partner's data, the application of advanced visualization software for social network analysis and situational awareness. Software was developed that computes effective visualizations of social networks. Data feed integration software will be developed that improves tactics and planning functions associated with maritime operations. ***FY 2010 Accomplishments:***	0.600	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Final FDL software was delivered to government partners. FDL was used for the Joint Inter-Agency Task Force-South Operations Table data integration in support of Thunderstorm Spiral 3 and improved knowledge discovery, data understanding, and situational awareness.			
Title: Wide-Area Infrared System for Persistent-Surveillance (WISP) ***Description:*** The effort will enable night capable persistent day or night surveillance over large areas. WISP produces nearly a full hemisphere (100 x 360 degrees) infrared image every 1.5 seconds. Unlike still cameras using fish-eye lenses, WISP scans the field quickly to produce very high resolution and low noise data over the entire scene. Operating in the longwave infrared (LWIR) spectrum, WISP can operate day or night without loss of performance. ***FY 2010 Accomplishments:*** The project provided a partial capability sensor, controller, processor, and data viewer. The Air Force wide area persistent surveillance program has a requirement for wide area day/night performance and has expressed interest in WISP to provide day/night wide area capability.	1.500	-	-
Title: Advanced Architecture ***Description:*** This project will provide the overarching concepts for an integrated information architecture that enables the capture, processing, and distribution of almost all of the data that DoD, the Intelligence community and ISR related systems generate globally in a rapid, relatively low cost, secure and open systems manner. ***FY 2010 Accomplishments:*** The Advanced Architectural effort provided a top-down flow against the problems by developing the specific goals and metrics for the sub-elements and various functional areas. These included the development of target insights, sensing and platform configurations and mission analysis. Further, response capabilities were included that range from anticipatory to routine crisis response. The architecture, metrics and supporting documentation are intended to help form the basis for an effective transition to a number of users in the services and agencies. ***FY 2011 Plans:*** Provide increased technical interoperability to improve analysis of mission data and better understanding of threats. Transition to one or more service or agency responsible for distributing large amounts of data.	0.100	0.150	-
Title: iDiplomacy ***Description:*** This effort planned and executed a November 2009 symposium that took place at the Gallup Organization in Washington DC. The main focus of the symposium was an open discourse on the evolving nature of public diplomacy in the	0.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
internet age due to new technologies, social networks and the democratization of communications. It focused on the application of these new tools across government and private organizations, as well as engaging individuals to work together as partners in public diplomacy. ***FY 2010 Accomplishments:*** Delivered a transcription, report and filmed footage that will be used to generate interest in a follow on symposium with a broader audience.			
Title: Special Studies ***Description:*** This effort will provide special studies and transition support to Rapid Reaction Technology Office (RRTO), integrating advanced Wide Area Surveillance (WAS) capabilities for Afghanistan focused missions with the goal of enhancing intelligence collection, exploitation, and analysis, while reducing the burden on theater resources. The effort will also provide project support and analysis of three ISR analysis projects separately funded through the Rapid Reaction Fund. ***FY 2010 Accomplishments:*** Conducted analysis, technical reviews and integration/transition support on WAS capability investments under the RRTO Broad Area Announcement (BAA), Thunderstorm exercise scenarios and experiments designed to test strategies for WAS employment in Afghanistan.	0.500	-	-
Title: Sociological Sensing ***Description:*** This effort will define surveillance and reconnaissance collection strategies and their associated intelligence analyses, to estimate sociological factors relevant to counter-insurgency (COIN) operations. The project will develop methods for using technical sensing to increase the speed and accuracy of assessing the state of sociological conditions. ***FY 2010 Accomplishments:*** Provided a set of draft Concept of Operations (CONOPS) and doctrine for both collection and analysis of sensor data to estimate sociological parameters of interest for COIN operations. The project is ongoing in FY 2011.	0.900	-	-
Title: Persistent Surveillance Test Bed (PSTB) Wide Area Persistent Surveillance Data Repository ***Description:*** This project will enable the continued distribution of a 50 terabyte set of electro-optical (EO) and ground moving target indicator (GMTI) data for the development of Intelligence, Surveillance, and Reconnaissance (ISR) analysis algorithms. The data set, with ground truth information, will be instrumental in the development and validation of numerous ISR analysis tools. ***FY 2010 Accomplishments:***	0.100	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
As part of this effort PSTB has provided uninterrupted test data distribution to in excess of 80 users and has developed an online architecture design and system diagram to facilitate access to various data sets.			
Title: Talon DASHBOARD ***Description:*** Talon DASHBOARD is a subscriber-based system with graphical user interfaces to assist in the exploitation of adversary weapons systems. Further details of this effort are classified. ***FY 2010 Accomplishments:*** Provided a subscriber-based visualization tool. Further details of this effort are classified.	0.500	-	-
Title: Blue Team Assessments ***Description:*** The funding will provide Lincoln Laboratory resources to provide inter-organizational technical bridges and continued support to Rapid Reaction Technology Office (RRTO) through special studies. Examples of special studies for RRTO in the past fiscal year include ground penetrating radar, change detection processing for Improvised Explosive Device (IED) detection, underground tunnel detection, feasibility study for a hybrid airship and classified tasks. ***FY 2010 Accomplishments:*** The completed written technical reports and briefings to document assessment study conclusions have been used to inform warfighters and decision makers.	0.400	-	-
Title: Intelligence, Surveillance, and Reconnaissance (ISR) Analysis and Architectures Support ***Description:*** The project will assess the value of ISR systems quantitatively by analyzing their role in the architecture of systems providing end-to-end mission effectiveness. The goal of this analysis is to provide information to the government to make better development, deployment and employment decisions with new ISR systems. ***FY 2010 Accomplishments:*** This effort provided assessments describing threat phenomenology and signatures for home-made explosives search, an ISR architecture implementing home-made explosive search with Measurement and Signatures Intelligence (MASINT) sensors and a report describing ISR sensor and system requirements for insurgent network discovery. The assessments are informing senior decision makers on focus areas for future developmental investments. ***FY 2011 Plans:*** Continue to assess value of ISR systems quantitatively by analyzing their role in the architecture of systems providing end-to-end mission effectiveness.	1.873	1.750	-
Title: Wide Area Video Exploitation Library (WaveLib)	0.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: WaveLib was developed as a modular toolkit of video processing functions designed to ingest raw imagery and metadata from wide area airborne sensors, such as Constant Hawk, and produce accurately geo-stabilized contrast-enhanced imagery, vehicle detections and tracks. The FY 2010 effort is focused on integrating the library functions into the existing APIX (trade mark) viewer and developing easy to use APIX applications. ***FY 2010 Accomplishments:*** Provided improved automated tracking through dense traffic, move-stop-move maneuvers, obscurations, and variable lighting conditions. WaveLib provides easy integration with current and future exploitation tools, and was integrated with the widely used APIX viewer.			
Title: Applied Systems Thinking Approach to Support Combatant Command Theater Security Cooperation ***Description:*** The project will work with geographic Combatant Command (COCOM) operators to improve methods to analyze complex steady state environments and evaluate potential Theater Security Cooperation (TSC) activities to support prioritization of effort. The initial effort will be conducted in cooperation with European Command (EUCOM) personnel that are involved with TSC activity, organization and prioritization. ***FY 2010 Accomplishments:*** As a result of this project, EUCOM operators have an improved ability to focus research, frame complex steady state issues, facilitate more productive discussion, and support more rigorous planning and prioritization of steady state activities. The longer term impact is more effective Theater Security Cooperation (TSC) plans.	0.300	-	-
Title: Center for Identification Technology Research (CITeR) Project Post Mortem Ocular Biometric Analysis and CITeR Support ***Description:*** In this effort researchers will study post mortem ocular captures to assess the potential effects of death on ocular biometric score changes and other relevant imaging metrics. The project will answer the question: “How does an individual’s biological death affect their optical biometrics?” ***FY 2010 Accomplishments:*** The project produced a base-line post mortem ocular biometric analysis that will be used in the development of future biometrics products as well as the assessment of currently available ocular systems. ***FY 2011 Plans:*** Two workshops are planned to identify future projects in the field of ocular biometric analysis.	0.200	0.400	-
Title: Real-Time Persistent Surveillance (RTPS) Architecture Demonstration Support	0.200	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The RTPS effort will develop a real time processing capability for wide area electro optical data to identify vehicle tracks in selected video areas of interest. This information is used to generate automated cues for a high-resolution EO sensor. The RTPS is also able to process cues from passive Radio Frequency (RF) sensors on the same platform. ***FY 2010 Accomplishments:*** This effort completed a demonstration of a real-time persistent surveillance architecture with a processing capability that provided tasking and cueing information. The capability is being incorporated aboard the Multiple-Aperture Sparse-Imager Video System (MASIVS) system.			
Title: National Technical Means (NTM) Communications Experiment ***Description:*** This project will demonstrate a technique to enhance wireless communications capabilities in challenging environments. Further details are classified. ***FY 2010 Accomplishments:*** The effort has improved the signal processing technology used with current SIGnals INTelligence (SIGINT) NTM sensors and demonstrated unique non-traditional applications of NTM sensors. Further details are classified.	0.400	-	-
Title: Critical Human Capital Reliability Detection in Contested Environments ***Description:*** This project is a proof-of-capability effort to gather available empirical data sources and baseline available electronic frameworks and information to help provide for enhanced insights of individual and organizational reliability / susceptibility. This project will develop a susceptibility index for assessing personnel. This initial data gathering effort will test commercial tools to provide an ongoing "continuous assessment" analysis within an area by determining a baseline and reporting changes by key factors. ***FY 2010 Accomplishments:*** Provided operational users an assessment tool for determining critical human or organizational reliability in a specific geographic area.	0.300	-	-
Title: Science-based Enhancements to Network Defense and Security (SENDS) ***Description:*** SENDS is a multidisciplinary approach to network operations and defense. It seeks synergy through the integration of basic sciences such as biology, physics and the social sciences with advanced modeling and simulation techniques and enlightened policies and educational concepts to produce more secure and resilient computer networks and warfighting operations environments. The project will develop and test SENDS capabilities to provide a neutral, highly collaborative	0.700	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
experimental setting that accommodated transparent interactions between heretofore discrete and non-interacting approaches to cyberspace operations. ***FY 2010 Accomplishments:*** Developed cyberspace operations defense simulation-based tools, a Center for Cyberspace Science and educational curricula for use by US Strategic Command. Additional users are law enforcement and other government operators in both routine and contingency operations.			
Title: NETWARS on the Borders ***Description:*** This effort will investigate networked forms of organizations among criminal and terrorist networks operating within and across US borders that take advantage of areas outside of effective US government control. (e.g. tribal reservations) ***FY 2010 Accomplishments:*** This understanding of the structure and functioning of criminal networks operating across US borders is helping the US government organize and operate more effectively to defeat these types of networks outside the US. The knowledge gained in this effort is informing the development of a pilot program for initial application at US borders with US Northern Command and subsequent application outside the US.	0.100	-	-
Title: Air Launched Cooperative Multiple Unmanned Aerial Vehicles (UAVs) for Intelligence, Surveillance and Reconnaissance (ISR) Missions ***Description:*** The project will develop a cooperative multiple autonomous vertical take-off and landing (VTOL) UAV system that provides warfighters with capabilities to continuously collect intelligence, conduct surveillance, and perform reconnaissance for mission planning and execution, friendly force protection, and exploitation of enemy weaknesses. ***FY 2010 Accomplishments:*** Conducted a final demonstration using two VTOL platforms launched from a manned aircraft that autonomously performed an ISR mission with tasking inputs from human operators. Air Force Special Operations personnel are working to integrate additional sensors aboard the UAVs.	0.500	-	-
Title: Project SHIVA ***Description:*** This effort will provide comprehensive and actionable intelligence regarding the manufacturing and storage of ammonium nitrate. Details of this effort are classified. ***FY 2010 Accomplishments:***	0.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
This effort has provided maps, coordinates and other related information regarding Home Made Explosives (HME) production and storage facilities in the Central Command (CENTCOM) area of responsibility. Operational users have successfully prosecuted targets using SHIVA products.			
Title: Communications Capability Demonstration ***Description:*** This effort will develop and demonstrate adaptive algorithms that allow for the processing of data to be transmitted across a sparse receiver array to suppress a stronger interfering signal while maintaining gain on a weaker signal of interest. ***FY 2010 Accomplishments:*** Demonstrated the capability to maintain a wireless communication link in the presence of a nearby strong co-channel interference source using a sparse receiver array. This capability is needed to facilitate robust wireless communications in a heavily-occupied RF spectrum, effective communication in the presence of strong jamming with minimal rate reduction, and communication with reduced detection profile.	0.300	-	-
Title: Active Electromagnetic Interference (EMI) Cancellation Techniques ***Description:*** This project, in coordination with the Defense Threat Reduction Agency (DTRA), will develop ideas for active cancellation of radio frequency (RF) noise. This capability will enable friendly communications in an RF jamming environment. The project will leverage a “crowdsourcing” approach to identify potential solutions. ***FY 2010 Accomplishments:*** In excess of 200 points of contact expressed interest in providing a solution to the posted problem. Seventeen solution ideas were submitted and reviewed by subject matter experts. None of the submitted ideas were deemed worthy of further pursuit. The project validated that innovative thinkers do not have ready solutions to this challenging problem.	0.100	-	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Compact L-Band and W-Band Antennas ***Description:*** This project, will conduct in coordination with the Joint Non-lethal Weapons Directorate, a novel “crowdsourcing” approach to find advanced methods and technologies that reduce the size of Radio Frequency (RF) tactical antennas. ***FY 2011 Plans:*** Multiple novel ideas were received and reviewed by JNLWD technical experts. The project started in late FY 2010 and evaluation of the novel ideas continues in FY 2011. As many as three projects may be subsequently awarded from this effort.	-	0.021	-
Title: Cat Eyes	0.100	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Cat Eyes is a dual use autonomous (ground and aircraft capable) low light surveillance camera system with automated target recognition software and embedded geo referencing and target mensuration. The system incorporates technology for improved sensitivity over previous low light camera systems. This project benefits the Warfighter by providing surveillance technology to support more widespread positive target identification leading to removal of more target threats and offenders. ***FY 2010 Accomplishments:*** Cat Eyes development effort and testing was successfully completed September 2010.			
Title: Title: Contingent upon congressional appropriation and/or congressional new start authorization: LAAD Integrated Picture ***Description:*** The Low Altitude Air Defense (LAAD) Section Leader Vehicle (SLV) and Fire Unit Vehicle (FUV) currently have the ability to display air tracks via Link 16 messages. There is a new requirement to display ground tracks in the SLV and FUV. This project will use the System Integration Environment (SIE) technology (a software solution) to overlay the air and ground tracks on the Joint Range Extension (JRE) application currently fielded in the SLVs and FUVs. If successful this project would eliminate the need to install the Binary File Transfer (BFTs) (a hardware solution) in the FUVs. ***FY 2011 Plans:*** This project is developing a prototyped Joint Range Extension gateway and client with an integrated air/ground picture which will be used for acquisition certification.	-	0.700	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: SCUDDS ***Description:*** This project is modeling, designing, constructing, and field deploying a Self-Contained, Underwater Dispersant Delivery System (SCUDDS) that will aid in masking a Sea, Air, Land (SEAL) Delivery Vehicle during nighttime littoral missions. The objective of this project is to provide a small eco-friendly organic system which will allow suppression of a bioluminescent signature and, therefore, visual detection at night. The operator will be provided an active stealth capability which currently does not exist. ***FY 2011 Plans:*** SCUDDS will conduct an operational demonstration in June 2011 and provide an operational testing report in September 2011.	-	0.500	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Iris on Android ***Description:*** This effort extends existing government owned technology for Iris Biometric Identification on Android mobile phones to produce a functional prototype system for field evaluation.	-	0.300	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2011 Plans: Objective is to deliver a prototype and demonstrate adaptation of Components of the Shelf (COTS) Android handsets for Iris identification. This project leverages commercial development for base imaging and processing platform, contributing to a flexible, multi-use device.			
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Threat Finance Stock Take ***Description:*** This project will conduct a government-wide stock-take of organizations involved in the collection of financial data and information that could prove important to U.S. national security. The project provides preliminary roadmaps for follow-on activities that could enable the national and homeland security communities to share, collaborate, and make use of disparate data sources, consistent with all applicable laws and regulations. The project will be executed in coordination with the Technical Support Working Group. ***FY 2011 Plans:*** Stock-take report, database, and proposed roadmaps will be delivered to the sponsor office.	-	0.250	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: UAV Outer Control ***Description:*** Description: This project will demonstrate the potential ease and effectiveness of outer control of small tactical UAVs. Student researchers will demonstrate outer control capabilities using COTS radio control systems and autopilots. Their ability to achieve control is documented with their approaches, equipment selection, and effectiveness. ***FY 2011 Plans:*** The effort will demonstrate the interoperability of small tactical UAVs when used by our warfighters and the potential for its use as technology surprise by our adversaries. Final report and findings will be produced.	-	0.250	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Aluminum Combustor ***Description:*** This project is developing a fuel feed system for an aluminum combustion power system. The project significantly improves the availability and economy of fuel to power a high energy power source for unmanned underwater vehicles (UUVs). ***FY 2011 Plans:*** This project will deliver a large bulk fuel feed system capable of supporting a greater than four hour combustor test at full power and greater than 20 hour combustor test at reduced power.	-	0.600	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Analysis and Targeting for Radicalization Intervention	-	0.300	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This project will pilot the use of its suite of graph, text, and web analytics to identify promising locations, websites, groups and individuals where intervention to prevent or reduce radicalization is most needed and can be most effective. Primarily using open-source information from the web, the project will identify and map relevant social and information networks, determine their virulence and effectiveness, map current influence flows and effects, and identify opportunities and candidate means for positive change. ***FY 2011 Plans:*** The project will produce a final report to include a counter-radicalization analysis as well as conclusions and recommendations regarding the general utility of these analytics for counter-radicalization targeting and planning. The final report will also include a plan laying out a path forward for full development, test, and deployment of software tools implementing the analytical process.			
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Red Team Tool ***Description:*** This project provides a construct to assess the susceptibility of technical solutions (sensors, algorithms, or architectural) to defeat by parties not intimately familiar with the technologies. The project is developing a construct that current or future Intelligence, Surveillance, and Reconnaissance (ISR) systems and sub-systems can be gamed against in a distributed desk top/table top environment against traditional and nontraditional players ***FY 2010 Accomplishments:*** Utilized a classified methodology to produce a Concept of Operations (CONOPS) as one component of support to an Intelligence Community Project. ***FY 2011 Plans:*** The results of Red Team exercises will provide a roadmap on which the services and agencies concerned can base future investment decisions.	-	0.100	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Analysis of High Frequency (HF) Communications in Southern Command Atlantic Operating Region (SOUTHCOM AOR) ***Description:*** This project seeks to identify HF voice and data targets in SOUTHCOM AOR, capture existing tactical/ national capabilities against the target set, recommend COTS-based gap-filling capabilities, and develop and operationally test prototype capability. ***FY 2011 Plans:***	-	0.625	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The project will characterize the current, emerging, and projected HF environment in the SOUTHCOM AOR, recommend capabilities to inform investment decisions, provide a template for other theaters, and test a prototype in a representative environment.			
Title: Dismounted Standoff Explosive Hazard Detection, Marking and Neutralization ***Description:*** This project will integrate ground penetrating radar (GPR)/electromagnetic induction metal detection arrays on existing Explosive Ordnance Disposal (EOD) robots to counter buried Improvised Explosive Device (IED) threats. This will provide dismounted soldiers and marines the ability to detect buried IEDs that are in areas not accessible to vehicle mounted IED detection sensors. Currently the only means of detecting buried threats in off-road environments is with hand held detectors, meaning personnel are within a few feet and completely vulnerable in the event of an inadvertent detonation. Providing a standoff detection, marking, and neutralization capability provides a significantly reduced risk approach to finding buried IEDs in complex terrain, interrogating them for forensic evidence that will assist with preventing future emplacements, and finally neutralizing them so that they no longer pose a threat. ***FY 2010 Accomplishments:*** Project developed three variations of prototypes within FY 2010 that are combinations of the two types of available EOD robots and the two types of sensor arrays. A sweeping array and forward-looking senor array will be integrated with the larger Talon EOD robot whereas only the seeping array will be integrated on the smaller Packbot EOD robot. Both types of sensor arrays are required to be able to search the various types of terrain in which dismounts are expected to operate and IEDs are likely to be buried. The thee configurations will undergo Technical Demonstration followed by an Operational Demonstration in FY 2011. Upon successful Operational Demonstration, the prototypes will be deployed to theater for user evaluation and potential upgrade if needed during FY 2012.	10.800	-	-
Title: Intelligence, Surveillance, and Reconnaissance (ISR) (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 RRTO ISR new start projects include improved surveillance sensors, tools to facilitate analysis of large data sets, methods to harvest meaningful intelligence from open and classified sources and establishment of an ISR architecture to facilitate integration of new and existing systems. ***FY 2011 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and	-	9.632	11.543

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future ISR capabilities. ***FY 2012 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future ISR capabilities.			
Title: Interface of Military ops with Law Enforcement and Border Patrol (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 RRTO Interface of Military ops with Law Enforcement and Border Patrol new start projects include collaboration and exercises with law enforcement organizations to identify overlap and synergies between military and law enforcement operations, exploitation of law enforcement data for use in an irregular warfare environment, development of improved border protection capabilities, and expanding the capabilities of biometrics and forensics tools. ***FY 2011 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities of interest to multiple federal organizations. ***FY 2012 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities of interest to multiple federal organizations.	-	9.633	11.543
Title: Autonomous Systems and Behaviors (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 RRTO Autonomous Systems and Behaviors projects include improvement to power systems to facilitate increased performance of unmanned systems, enhanced capabilities for multiple autonomous systems to cooperatively interact, development of sensors for integration aboard unmanned platforms, improvements to data ex-filtration from unmanned sensors and “red teaming” to counter emerging unmanned threats from potential adversaries. ***FY 2011 Plans:***	-	9.633	11.543

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. RRF will support development of unmanned autonomous aerial, surface and subsurface systems. ***FY 2012 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. RRF will support development of unmanned autonomous aerial, surface and subsurface systems.			
Title: Countering Violent Extremism and Planning Support (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 RRTO Countering Violent Extremism and Planning Support projects include studies of violent groups, collection of best-practices from a variety of federal organizations, deterrence, social network analysis, effective communication techniques in tribal environments, science and tech capabilities in support of strategic communications, social analysis to support counter-insurgency efforts, and development of multi-disciplinary multi-agency approaches to complex operational challenges. ***FY 2011 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities to counter the spread of violent extremism. ***FY 2012 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities to counter the spread of violent extremism.	-	9.633	11.543
Accomplishments/Planned Programs Subtotals	49.938	48.667	48.486

	FY 2010	FY 2011
Congressional Add: Small Craft Threat Identification (SCTI) ***FY 2010 Accomplishments:*** This effort was a congressional add to RRF in FY2010. SCTI provided enhanced situational awareness through the novel adaptation and combination of several existing technologies. Technology Systems Inc's (TSI), Augmented Reality Visualization for the Common Operational Picture	1.200	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

	FY 2010	FY 2011
(ARVCOP) capability provides an integrated Common Operational Picture that is built from a variety of sources including Charts, Mission Plans, video, infrared, radar, AIS, Link16 and others. This effort added a capability to ARVCOP to further enhance situational awareness by evaluating and correlating clues developed from these inputs. SCTI resulted in a capability enhancement that is suitable for installation in a wide range of craft including the Special Operations Craft – Riverine (SOC-R), Riverine Patrol Boat (RPB), Riverine Command Boat (RCB), and the emerging Combat Craft Medium (CCM). This effort has produced 5 units that are undergoing a military utility assessment.		
Congressional Adds Subtotals	1.200	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the specific project plans. In addition, project completions and success are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target milestone dates, production measures, fielding dates, and demonstration goals and dates. Generic performance metrics applicable to the Rapid Reaction Fund (RRF) includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on warfighting needs" and the metrics for this objective is to transition 30% of completing demonstrations program per year. During FY 2010 the RRF achieved a transition rate of greater than 75% exceeding the objective of 30%.

In FY 2011 and FY 2012, RRF investment decisions will be made during the execution year, to rapidly respond to combatant commander requirement and new threats/ new opportunities.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P829: *Technology Transition Initiative (TTI)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P829: *Technology Transition Initiative (TTI)*	17.796	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY 2011, Technology Transition Initiative (TTI), resources are being transferred from Quick Reaction Special Projects to PE 0603942D8Z (Technology Transfer and Transition) as part of an effort to more effectively align interwoven program efforts that will benefit management communications, budget justification, fiscal tracking and improve overall program resource management of Technology Transfer and Transition efforts.

A. Mission Description and Budget Item Justification

The Quick Reaction Special Projects Program (Program Element 0603826D8Z) has three sub-elements: the Technology Transition Initiative (TTI), the Quick Reaction Fund (QRF) and the Rapid Reaction Fund (RRF). The fiscal controls above represent the investment of the QRSP Program funding for the TTI Program.

The Technology Transfer and Transition (TT&T) program (Program Element 0603942D8Z) has two sub-elements: the Technology Transfer program (P942), and the Technology Transition Initiative (P949). The fiscal controls above represent the investment of the TT&T Program funding for the TTI Program (P949). The Technology Transition Initiative (TTI), authorized by Title 10 and Section 242 of the FY2003 Defense Authorization Act, facilitates the rapid transition of new technologies from the Department of Defense (DoD) science and technology (S&T) base into DoD acquisition programs. The program addresses the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter.

Since the program inception in FY 2003, 78 projects have been initiated and 41 are complete. Of the 50 completed projects, 35 (70%) have successfully transitioned to DoD Acquisition Programs of Record or procurement contracts for operational use and subsequent fielding; exceeding the objective of 30% for demonstration programs (Strategic Objective 4-3, Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD (AT&L)).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Electronic Image Intensifier for Pilotage (Army)	2.286	-	-
Description: This project will integrate Electronic Image Intensifier (EI2) technology into a lightweight sensor for the Apache Modernized-Pilot's Night Vision System (M-PNVS). Four form-fit, function and flight ready EI2 prototypes will be engineered, built, and delivered to PM Apache for aircraft qualification and users evaluation flights. The EI2 camera will provide performance that is equal to or greater than the current aviator's night vision goggles and at the same time allow for image fusion with the second generation Forward Looking Infrared (FLIR) on the Apache helicopter. Program Outputs and Efficiencies: meet pilotage requirements for dynamic motion, resolution, and contrast through improved readout electronics and high definition format (1920 x 1080); exit criteria to be met include Aviator's Night Vision Imaging System			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P829: *Technology Transition Initiative (TTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
(ANVIS) performance and $35 thousand per camera cost; four pre-production prototype cameras delivered for operational flight testing in FY 2011. TTI funding accelerates the transition of this capability by two to three years. ***FY 2010 Accomplishments:*** Completed detailed design and fabrication of four pre-production prototype cameras; conducted initial reliability and environmental testing; initiated component qualification testing.			
Title: Fuel Cell Powered Long Endurance Expendable Unmanned Aircraft System (Navy) ***Description:*** The Navy and Special Forces have counterterrorism technology requirements that include an over the horizon (OTH) intelligence, surveillance and reconnaissance (ISR) capability using small unmanned aerial systems (UASs). Battery powered UASs, although inherently stealthy and safer to operate in most environments, lack the necessary endurance required for SOF/ISR operations and because of power and weight issues, have low grade electro-optical (EO) cameras. Currently, there is no existing UAS that can meet the needs and requirements. This technology gap prevents current SOF war plans from being executed. This project will mitigate the problem by completing the development and demonstration of a small, expendable, long endurance, fuel cell powered UAS (the XFC) with a real time high resolution electro-optical/infrared (EO/IR) payload. ***FY 2010 Accomplishments:*** Procured all components for the final build-out of the project deliverables and full-up demonstration. TRL levels of sub-systems increased to near ready field demonstration and eventual transition to industry. Flew seven XFC vertical Electrically Assisted Take Off flights with wings unfolded; all were successful. Neared completion of final tests of subsystems leading to the folded wings vertical launch. Completed several Safety Milestones required by NAVSEA and NAVAIR. Integrated into the Generation III XFC the demonstration 500 watt fuel cell propulsion unit and did first test flight 11 June; flight was completely successful with both airplane and Generation III propulsion system functioning on the mark. Efforts will result in the delivery of two-four XFC UAS with a ground Station and an end- to-end test of autonomous flight with linkages to a Navy surfaced ship, submarine or a land based ground control system so as to demonstrate industry readiness by 1Q FY 2011. Planned transition to Navy production is scheduled to start in FY 2011.	2.187	-	-
Title: Medium Caliber Cartridge Improvements using Micro Electro-Mechanical Systems and Direct Write Explosive Ink ***Description:*** 40 millimeter (mm) high-explosive, dual-purpose (HEDP) M433 and M430 cartridges have been in service since the 1950s and 1970s respectively, and are used with the M203 low-velocity grenade launcher and the MK-19 grenade machine gun by all Services. Both cartridges use point detonating fuzes with mechanical safe and arm (S&A) devices which do not reliably detonate on soft impact targets or high graze angles. The objective of this effort is to improve the reliability of these cartridges through a Micro-Electro-Mechanical (MEMS) fuzing system that incorporates electronic initiation, improved target sensing using	3.660	-	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P829: *Technology Transition Initiative (TTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
paired MEMS impact sensors, self-destruct capability, command arm enable, more accurate arming distance, and automated explosive ink loading. In addition to improved reliability, these design enhancements will reduce volume and cost. Outputs and efficiencies: Incorporate impact sensors that will sense initial impact and electronically send a signal to initiate the explosive train for improved lethality and improved reliability on soft targets (from 50 percent current performance to 90 percent), and also significantly reduce the number of duds on the battlefield and training ranges. The 40mm MEMS Fuze will also require less volume which will allow room for improvements in lethality or other future alternate applications. TTI accelerates transition of this technology from Army Armament Research, Development and Engineering Center (ARDEC) to Project-Manager Soldier Weapons (PM-SW) by approximately three years. ***FY 2010 Accomplishments:*** Completed initial Army Fuze Safety Review Board briefing; Built 150 test units; Completed technology demonstration; Award DOTC contract for MEMS S&A prime contractor 4QFY2010.			
Title: Solid State Laser Ignition (Army) ***Description:*** The Solid State Laser Ignition System (SSLIS) replaces the primer feed mechanism (PFM) and primers used in the LW155 M777 family of towed howitzers. The current PFM ignition system is complex and high maintenance with known operational issues due to mechanical jamming of the PFM and premature firing due to primer sensitivity. This SSLIS increases system safety by eliminating the manufacture, storage, resupply and demilitarization of explosive primers and reduces system costs associated with the logistics and maintenance required with primers and primer feed mechanisms. Program Outputs and Efficiencies: (1) an integrated design for M777 application where major risk areas have been mitigated or managed; (2) hardware availability to verify the design in system tests; and (3) a comprehensive assessment of the technology to support a production decision and an operational evaluation of its readiness for field insertion. This SSLIS effort will yield a system prototype and will accelerate the availability of this technology for fielding by four years. ***FY 2010 Accomplishments:*** A system overview and live fire demonstration of the diode pumped laser ignition system (DPLIS) was provided to the User during the Master Gunners conference held at Yuma Proving Ground (YPG). DPLIS hardware was integrated on the LW155 M777 howitzer and live fire engineering testing was conducted. The post preliminary design review (P-PDRA) was conducted and approval to enter into the advanced system demonstrator (ASD) phase of the program was obtained. Over 2,000 rounds were fired on a single set of DPLIS hardware. Improvements to the prototype hardware design were incorporated and captured in the DPLIS Technical Data Package (TDP). Prototype hardware was fabricated in support of the advanced system demonstrator	0.725	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P829: *Technology Transition Initiative (TTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
(ASD) test and valuation and live fire manned demonstration in accordance with the LW155 DPLIS Program test schedule. Test Readiness Review (TRR) for ASD test and live fire manned demonstration was conducted. Technology Readiness Assessments were performed. During FY2011, the TDP will be updated and TTI efforts will be completed. Technology will transition to JPMO LW155 and the SSLIS TTI project will be closed out.			
Title: Precision Fires Image Software Suite Handheld Capability (Navy) ***Description:*** Currently Overseas Contingency Operations (OCO) missions are planned using traditional means and require dismounted operators, (conventional and Special Operations Forces (SOF)), who do not carry laptop computers. The mission set is currently supported by paper. The objective of this project is to integrate Battlespace Awareness (Mission Planning, Force Protection, Direct Action, etc.) capability on a Windows CE/mobile handheld computer by building upon already proven and deployed technology. The availability of these software tools on a handheld computer will immediately advance warfighter capabilities by enhancing situational awareness, precision targeting, and rapid employment at the tactical level. Program Outputs and Efficiencies: This project will generate and transition a software suite that provides image, video, and geographical capabilities on the Army's Pocket Sized Forward Entry Devices (PFED) and compatible Special Operations Forces Windows CE/mobile handheld computers. These forward operating Battlespace Awareness applications will be built around the previously transitioned and deployed Precision Fires Image (PFI), which is a National Geospatial-Intelligence Agency (NGA) validated, Central Comand (CENTCOM) approved, image based targeting tool for coordinate seeking weapons. Integration to the handheld computer will be advantageous in achieving advanced mission capability with less weight, space, and provide shorter operational readiness delays. The TTI funding will accelerate the acquisition and integration of this handheld software capability by two to three years. ***FY 2010 Accomplishments:*** (1) Developed, tested, delivered, and transitioned handheld software (Version 1.2.3) into SOF and US Army PFED programs; (2) Worked with NGA, CENTCOM, and SOCOM to provide product validation and required training packages to schoolhouses for operator certification; (3) Worked with NGA and the USAF to develop PFI reach-back capability on the Secret Internet Protocol Router Network (SIPRNet) where operators can download imagery for most Areas of Responsibility AOR) in theater; (4) Worked with trainers at Ft. Sill (US Army Schoolhouse) to certify the Mobile Training Team (MTT) on PFI software tools; (5) Integrated Joint hotographic Experts Group (JPEG), JPEG 2000, New Universal Image (NUI), and Common Object capability into an alpha release (Version 2.0), which is currently being tested by a few operators; (6) Trained and certified 56 conventional and 73 special forces personnel; (7) Produced an "unclassified" generic PFI reader, which provides source code to third parties requesting PFI	1.587	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P829: *Technology Transition Initiative (TTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
capability in tanks, aircraft, and other platforms; (8) Produced a version of PFI software for operators using Windows Personal Computers (PC) in order to establish a training venue with the same look and feel of the handheld computer.			
Title: Magneto-Rheological (MR) Fluid Suspension System for Stryker (Army) ***Description:*** The objective is direct replacement of the Stryker Family of Vehicles (FoV) passive suspension system with the Magneto-Rheological (MR) Fluid Semiactive Suspension System during the Stryker Modernization Program (S-MOD). The MR Suspension System significantly reduces shock and vibration levels, improves vehicle mobility and handling, and improves chassis stability, thereby improving crew responsiveness during target acquisition and engagement as well as improving firing accuracy for the Mobile Gun System (MGS). Program Outputs and Efficiencies: The MR Suspension technology is low risk and will provide outstanding vehicle performance, including cross-country speed improvements up to 72%, vehicle hull shock and vibration reductions up to 60%, a 30% improvement in vehicle handling stability, and greater than 50% improvement in firing accuracy. The MR suspension improvement in ride performance will also reduce operator fatigue, thereby increasing crew sustainment and operational effectiveness. The TTI effort will accelerate the integration activity to the Stryker fleet by 8-12 months. ***FY 2010 Accomplishments:*** TACOM LCMC Assessments, Test Plans, Reports, and Misc.: Procured contracts, solicitated cost estimates and test plans from government testing facilities and generated reports of each of the testing phases as well as purchased parts for testing and shipped the test vehicle. The design iterations were made based on the performance of the vehicle and the MR Suspension System during the previous endurance tests. PMO SBCT in partnership with General Dynamics - Land Systems (GDLS), the Original Equipment Manager (OEM), will be hosting a vehicle demonstration as a part of the S-MOD program technology open competition at Aberdeen Proving Grounds (APG) during October 2010 through November 2010. This demonstration will measure the performance of the MR suspension as well as the other competing suspension systems that will be used to determine which suspension system will be selected. This action will fund contractor support during the demonstration. This is the seminal event that will transition the technology to PMO SBCT.	1.200	-	-
Title: Polymer Light Emitting Diode (PLED) Identification of Friend or Foe (IFF) (USSOCOM) ***Description:*** United States Special Operations Command users currently lack adequate,mutually recognizable, and intuitive IFF systems that are accepted and interpreted across the Command. An improved IFF system is required to mitigate potential friendly fire incidents within Special Operations Force (SOF). The objective of this project is implementation of a next generation IFF system incorporating PLED technology and standard Light Emitting Diode (LED) technology for laser interrogated response visible only to Generation III Night Vision Goggles (NVGs). This Technology Transition Initiative (TTI) will accelerate the program	0.350	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P829: *Technology Transition Initiative (TTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
by 12-18 months. In addition to accelerating the availability of technology, TTI funding will enable acceleration in manufacturing and production of PLED and LED emitters. Program Outputs and Efficiencies: The Program will deliver significantly enhanced IFF capability; providing an IFF emitter visible to GEN III NVGs operating in the near-Infrared (IR) spectrum and initiated only by modulated military laser interrogators (AN/PEQ-5); The effort will focus on developing brighter PLED material with extended emission range, improving efficiency of the system through integration of flat-cell batteries, and development of a streamlined, flexible form-factor that meets user requirements. ***FY 2010 Accomplishments:*** Planned accomplishments for FY2010 included the development and delivery of Spiral 2 PLED IFF Tag prototypes (200 units) and a limited user assessment of the Spiral 2 prototypes. Additionally, a variant involving a LED configuration was developed and 200 prototypes were delivered and tested alongside the PLED variant. During FY2011, the effort will continue transition into the Program of Record at USSSOCOM PEO SOF Warrior and finalize requirement documentation necessary for full-scale acquisition.			
Title: Improved Tactical Air Launched Decoy - Jamming (ITALD-J) ***Description:*** This project will transition a compact payload for a new variant of ITALD using component designs developed under ONR Future Naval Capabilities program funding. Additional information is For Official Use Only (FOUO). Program Outputs and Efficiencies: This project integrates and transitions a new payload into the currently fielded ITALD. Four form-fit systems and firmware will be delivered. ***FY 2010 Accomplishments:*** Vehicle and avionics modifications were completed and repackaged together. System hardware and firmware completed required effectiveness testing. Prototype vehicle and payloads were to have completed environmental and captive carry flight testing and are being integrated into test facilities schedules. Four prototypes were to be delivered to the transition program of record.	0.900	-	-
Title: Hellfire Height of Burst (HOB) Sensor (Army) ***Description:*** The Hellfire Height of Burst Sensor is a miniaturized radio frequency (RF) target detection device that will be integrated into the new Electronic Safe and Arm Device (ESAD) being incorporated into the next generation Hellfire missile (Hellfire R). The HOB sensor provides for improved lethality against targets in the open by detonating the warhead at a height above ground optimized for these targets. This TTI project funds the final design and engineering of the HOB sensor optimized for	1.724	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P829: *Technology Transition Initiative (TTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Hellfire, provides component and system level environmental and hardware-in-the-loop testing, and allows two flight tests of HOB sensor equipped missiles. Program Outputs and Efficiencies: The HOB sensor will be integrated into the Hellfire missile and undergo hardware-in-the-loop (HWIL), environmental, and flight testing as part of the TTI effort. The final outcome will be two missile flights incorporating the HOB sensor. The first flight will replace the warhead with a telemetry package to record the missile flight data as well as the point at which the HOB sensor triggers the warhead. The second flight will incorporate both the HOB sensor and the Hellfire warhead. Lethality data will be collected to validate the modeled performance against targets in the open. Simulation has shown that the HOB sensor will significantly increase the lethality when fired from platforms that allow a steep angle of impact. TTI accelerates the transition of this capability by two years. ***FY 2010 Accomplishments:*** Performed design verification of a prototype HOB sensor through laboratory and dynamic testing and determined the electrical and mechanical integration methods for the HOB unit into the Hellfire R missile			
Title: Hellfire II Next Generation Captive Carry Health Monitor (NG-CCHM) (Army) ***Description:*** The Hellfire II NG-CCHM is a missile health monitoring device that measures and records operational and environmental stresses tailored to the most recent Hellfire II missile design, the AGM-114R model. The unit will be a self-powered, low-cost autonomous system capable of measuring and recording key health status parameters. The unit will be an electronic data acquisition device embedded into each missile and will be optimized for long life to automatically monitor temperature exposure, drop shock events and record vibration levels that can cause degradation to the missile over time. Program Outputs and Efficiencies: The primary outputs and efficiencies to be demonstrated in the project are: (1) reduced Operations and Maintenance (O&M) costs and maintenance burden to Warfighter; (2) increased reliability; (3) enhanced system safety; and (4) increased readiness. TTI accelerates the transition of this capability by two years. ***FY 2010 Accomplishments:*** FY 2010 Accomplished: Developed performance based specification, completed systems requirements analysis and defined system architecture, completed preliminary component selection, conducted preliminary design review and began detailed design.	1.594	-	-
Title: Accelerated Interlocking Mortar Increment Container Technology (Army) ***Description:*** The objective of this program is accelerate the transition of interlocking mortar increment container (MIC) design and fabrication technology to ensure uniform propellant ignition and reduce differential pressures which will eliminate a noted safety	0.450	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P829: *Technology Transition Initiative (TTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
critical mechanism and reduce the possibility of critical short rounds <80% of intended range) due to shearing of fin blades and asymmetrical burn. The interlocking MIC design eliminates the potential alignment of the open ends of the propelling charges and will greatly reduce the chances of more propellant being on one side of the mortar fin boom. This eliminates the imbalance of the energetics and associated potential problematic pressure differential within the mortar tube. The warfighter will have no chance of a sheared fin failure due to unexpected alignment of propelling charges which, in turn, will reduce the possibility of a critically short flight 120mm rounds in theater. Accelerating the maturation, transition, and insertion of this interlocking "high hat" mortar increment container technology into the 120mm mortar ammo program of record (POR) will improve safety and accuracy for our light and dismounted ground forces. It will also lay the foundation for potential subsequent application to 60mm and 81mm mortar ammo if warranted. Program Outputs and Efficiencies: Provides the warfighter with safer mortar ammunition; further prevents the possibility of unexpected short flight of 120mm mortar rounds in theater; improves soldier safety during training. TTI accelerates the deployment of this capability by 18 months. ***FY 2010 Accomplishments:*** FY2010 Accomplishments: Baselined the final design, fabricated, tested, and qualified Interlocking Mortar Increment Container			
Title: Integrated Information Management System (IIMS) Transition ***Description:*** The Integrated Information Management System (IIMS) is a collaborative situational awareness tool which aids in the management of conventional and Chemical, Biological, Radiological, and Nuclear (CBRN) events at fixed, expeditionary and incident response sites. IIMS includes detector/ warning networks, access to CBRN models, and information exchange with civil sector and coalition partner organizations. IIMS is in the base defense component of the AF Theater Battle Management Core System – Unit Level/Unit Command and Control (TBMCS-UL/UC2). It addresses both conventional and CBRN incidents. It is replacing the Survival Recovery Center (SRC). It improves decision making and battle management activities in the event of a conventional or CBRN incident. The objective of this effort is to transition IIMS into TBMCS-UL/UC2 Increment Two, and subsequently into the final TBMCS-UC2. The additional IIMS capabilities will augment the fielded TBMC-UL/UC2 to extend original capabilities, provide a stand-alone capability, and to incorporate joint CBRN tools. A successful transition of IIMS to TBMCS-UC2 through this spiral development process will significantly increase the base defense/response capabilities available to the warfighter. Program outputs and efficiencies: TTI funding accelerates the SRC replacement with planned upgrades to IIMS that more efficiently identify and respond to issues preventing the flying mission by 1-2 years. TTI funding accelerates upgrades to integrate	0.050	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P829: *Technology Transition Initiative (TTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
sensor/detector networks and improve communications with off-base agencies by 4+ years. The transition of IIMS into the TBMCS-UC2 N-tier Service Oriented Architecture enables transition of new capabilities into TBMCS-UC2 through the IIMS framework and the adjudication of any Priority I or Priority II software trouble reports at the time of transition. The software will adhere to general quality and reliability standards and include standard software product sets upon delivery (i.e. source code, executable code, documentation, test results). ***FY 2010 Accomplishments:*** Accomplished: Prepared for and conducted testing at the AF 46th TS for transition to TBMCS-UL/UC2 Increment Two.			
Title: Surfactant System for Surface Chemical, Biological (CB) Agent Removal ***Description:*** Mature a multi-purpose surfactant technology to accelerate its transition to the Decontamination Family of Systems (DFoS). There is an immediate and unmet requirement for a cargo aircraft decontaminant. The primary means to decontaminate aircraft is ineffective in decontaminating most Chemical and Biological (CB) hazards and material compatibility issues exist with currently fielded decontaminants and aircraft exteriors. Current decontaminants are single purpose items and carry a significant logistics burden. The surfactant technology will provide the Warfighter with a multi-use, advanced formulation for mitigating CB hazards to operational (threshold) or thorough (objective) levels. MIL-PRF-87937D testing will be conducted to qualify the surfactant system as an aerospace cleaning compound and enable it to be inserted on the Qualified Products List (QPL). The surfactant technology can be used as a routine cleaning compound as well as an aircraft-cleaning compound. TTI accelerates transition by more than two years. Outputs and efficiencies: a) Validate chemical efficacy (via contact and vapor testing) on priority painted materials; b) demonstrate biological efficacy; c) MIL-PRF-87937D qualified product (physical, chemical, toxicological properties, environmental impact). ***FY 2010 Accomplishments:*** Initiated chemical efficacy validation and started surfactant concept of operation (application methods) to maximize chemical and biological removal efficacy	0.400	-	-
Title: Contamination Indicator/Decontamination Assurance Spray ***Description:*** Mature a contamination indicator / decontamination assurance spray technology to accelerate the transition of a nerve agent indicator spray to the Decontamination Family of Systems (DFoS). The capability to visually detect the location of contamination on various surfaces will reduce time, manpower, vehicle throughput, water, and decontaminant requirements as well as exposure hazard to Warfighters performing Detailed Equipment Decontamination (DED). Once the decontamination	0.683	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P829: *Technology Transition Initiative (TTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
process is complete, the spray could be re-applied to ensure the process was successful and complete, enabling a dual-use. Compared to currently fielded chemical agent detectors, it displays resistance to environmental and chemical interference. The objective of this project is to fill the gap in availability of the active ingredient and engineer the spray to be able to be used with currently fielded applicators. Completion of scale up of nerve agent formulation; Completion of encapsulation work and demonstration of compatibility with selected fielded sprayers; validation of spray performance with live agents; Delivery of quantities of nerve agent disclosure spray formulation for government testing; Obtaining Environmental Protection Agency (EPA) Toxic Substances Control Act (TSCA) approval for disclosure system; Preparing and delivering Technology Transition Data package including Manufacturing readiness Assessment (MRA) report and Technology Readiness Assessment (TRA) report. Outputs and efficiencies: a) a method of manufacturing large quantities of the active ingredient (enzymes) to ensure their availability to supply large-scale sprayers; b) encapsulated specific ingredients within shear coatings allowed for reformulation of the spray to a single powder that can be sprayed using currently deployed equipment. c) completion of chemical agent sensitivity verification testing. TTI accelerates transition by more than three years. ***FY 2010 Accomplishments:*** Accomplished: Started scale up nerve agent formulation and initiated encapsulation of substrate powder in shear-sensitive polymers shells.			
Accomplishments/Planned Programs Subtotals	17.796	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the project plans identified above as well. In addition, program completion and success will be monitored against program schedule and deliverable stated in the proposals. The metrics include items such as target dates from project work break down schedules, production measures, production goals, production numbers and demonstration goals and dates. The title of this objective is "Speed technology transition focused on warfighting needs". The metrics for this objective and the objective of TTI is to transition 30% of completing demonstrations program per year.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	**PROJECT** P829: *Technology Transition Initiative (TTI)*

In FY 2010, the Technology Transition Initiative demonstrated a transition rate of 70% and exceeded the 30% goal identified

FY 2011 Goal: In FY 2011, Technology Transition Initiative (TTI), resources are being transferred from Quick Reaction Special Projects to PE 0603942D8Z (Technology Transfer and Transition).

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P830: *RDT&E Architecture and Integration*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P830: *RDT&E Architecture and Integration*	-	-	10.625	-	10.625	11.527	11.192	11.424	11.814	Continuing	Continuing

A. Mission Description and Budget Item Justification

The National Counterterrorism/Counterinsurgency Integrated Test and Evaluation Center (NACCITEC) at Yuma Proving Grounds consists of three Joint Experimentation Range Complexes (JERCs) which to date have been leveraged primarily to support development of counter IED technologies. The JERCs, with additional investments, are capable of functioning as a venue for a much wider spectrum of evaluations designed to support the QDR mandated development of an institutionalized “Rapid Acquisition Capability”. The requested funding supports the development of a representative forward operating base infrastructure designed to assess force protection systems and to support future rapid prototyping and rapid fielding initiatives. This expanded focus into FOB defense technologies and to future threat and capabilities assessments will range beyond the implementation and execution window of the Joint Improvised Explosive Device Defeat Organization (JIEDDO) program. Potential focal areas include analysis of future homemade explosives (HME), future IEDs, counter IED capability development, characterization of future electro-magnetic environments and the integration of multiple sensors and weapons in a cohesive FOB defensive architecture. This initiative aligns under the Quadrennial Defense Review (QDR) focal area “Institutionalizing Rapid Acquisition Capability” and its third tenant “assessing alternatives and executing a solution (acquisition)”.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Experimentation Range Complex Expansion	-	-	10.625
Description: To support the expanded JERC capabilities, these resources support a modest level of testing infrastructure improvement, personnel and test equipment. These resources support the ability to create and test in a representative environment the counters to future commercial wireless capabilities (4G) and IED activations, forward operating based systems, characterization of future HME precursor materials and assessment of Intelligence, Surveillance, and Reconnaissance (ISR) systems in both stand alone operations and within an operational context. This enhancement will support the Director Defense Research & Engineering (DDR&E)/JIEDDO Science & Technology (S&T) investment and acquisition strategy. ***FY 2012 Plans:*** Supports expanded JERC capabilities to provide a modest level of testing infrastructure improvement, personnel and test equipment. These resources support the ability to create and test in a representative environment the counters to future commercial wireless capabilities (4G) and IED activations, forward operating based systems, characterization of future HME precursor materials and assessment of ISR systems in both stand alone operations and within an operational context. This enhancement will support the DDR&E/ JIEDDO Science & Technology (S&T) investment and acquisition strategy.			
Accomplishments/Planned Programs Subtotals	-	-	10.625

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	**PROJECT** P830: *RDT&E Architecture and Integration*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

NA

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the specific project plans. In addition, project completions and successes are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target dates, production measures, fielding dates, and demonstration goals and dates. Generic performance metrics applicable to the RDT&E Architecture and Integration initiative includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on warfighting needs" and the metrics for this objective is to transition 30% of completing demonstrations program per year.

In FY 2012, investment decisions will be made during the execution year, to rapidly respond to combatant commander requirement and new threats/new opportunities as they relate to technologies emerging from non-traditional sources.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P831: *Joint Rapid Acquisition Cell Support*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P831: *Joint Rapid Acquisition Cell Support*	-	-	1.771	-	1.771	1.968	1.970	2.053	2.272	Continuing	Continuing

A. Mission Description and Budget Item Justification

This funding includes support for the Joint Rapid Acquisition Cell (JRAC) to enable management and tracking of COCOM identified and Joint Staff validated immediate warfighter needs. This project is be under the cognizance of the JRAC and is responsible to:

(1) Coordinate review of validated Joint Urgent Operational Needs (JUON) and assign responsibility to appropriate DoD Components for timely funding and resolution.

(2) Serve as the review and approval authority for the DoD Components' strategy to fund and mitigate the identified JUON capability gap.

(3) Continually assess actions taken by the DoD Components to resolve JUONs and recommend to the USD(AT&L) any changes determined appropriate to improve their responsiveness to JUONs.

(4) Provide periodic reports to the Secretary of Defense on new and outstanding JUONs

(5) In coordination with USD(C)/ CFO, manage the Rapid Acquisition Fund (RAF) to allocate resources to priority unfunded JUONs.

(6) In coordination with the Office of the Chairman of the Joint Chiefs of Staff and the USD(C)/ CFO, make programmatic, budget, and acquisition recommendations for JUONs and identified capability gaps to the Secretary of Defense.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Rapid Acquisition Cell (JRAC) Management Support	-	-	1.771
Description: This funding is utilized to support the staff manning of the (JRAC to enable management and tracking of COCOM identified and Joint Staff validated immediate warfighter needs. This baseline is being initiated in FY 2012 to preclude ad hoc and unstable historical programmatic and financial support to the JRAC staff. ***FY 2012 Plans:*** Support for the Joint Rapid Acquisition Cell (JRAC) to enable management and tracking of COCOM initiated and Joint Staff validated immediate warfighter needs.			
Accomplishments/Planned Programs Subtotals	-	-	1.771

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

NA – Capabilities acquired to fulfill JUONs are provided by other DoD components.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	**PROJECT** P831: *Joint Rapid Acquisition Cell Support*

E. Performance Metrics

JRAC performance metrics are specific to each JUON and include measures identified in the management approach for each JUON. In addition, JUON completions and successes are monitored against schedules and deliverables stated in the JUON management approach. The metrics to which JRAC support correlates is to the number of full time personnel identified in the JRAC support contract with associated pay rates and shall not exceed the specified amounts/hourly rates and/or firm fixed price.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P832: *Software Producibility/Technology from Non-Traditional Sources (TNTS) Initiative*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P832: *Software Producibility/ Technology from Non-Traditional Sources (TNTS) Initiative*	-	-	4.160	-	4.160	4.405	4.208	4.284	4.453	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Software Producibility/TNTS initiative includes support to find, evaluate, and test innovative technologies emerging from non-traditional sources. Private sector investment has created rapid advances in technology across a broad field of capabilities. Obtaining an early, accurate understanding of the technological advances that are emerging from small, innovative companies has been problematic for the Department of Defense (DoD) due to these types of companies either overlooking or even avoiding federal sales opportunities. Further, once such innovative technologies become commercially available they can be rapidly obtained by insurgents for terrorist actions. These program funds will be used to discover emerging technologies, evaluate their potential to fit DoD needs, and where appropriate conduct critical tests of the components or software under DoD conditions. The facilitation of early interactions and meaningful information exchanges between the innovative companies and DoD users will accelerate the application of emerging technical solutions to DoD needs, reduce development costs, and avoid potentially disastrous technological surprises from insurgent use of such new technology. In addition, it is important to understand how developments in commercial technology might impact existing DoD programs and systems. Equally important, new commercial technologies may require new DoD policies on the use of the technology or a modification to existing DoD policy.

These funds were transferred from PE 0603781D8Z: Software Engineering Institute (SEI) starting in FY 2012.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Innovative technologies emerging from non-traditional sources	-	-	4.160
Description: These funds will be used to discover emerging technologies, evaluate their potential to fit DoD needs, and where appropriate conduct critical tests of the components or software under DoD conditions. The facilitation of early interactions and meaningful information exchanges between the innovative companies and DoD users will accelerate the application of emerging technical solutions to DoD needs, reduce development costs, and avoid potentially disastrous technological surprises from insurgent use of such new technology. In addition, it is important to understand how developments in commercial technology might impact existing DoD programs and systems. Equally important, new commercial technologies may require new DoD policies on the use of the technology or a modification to existing DoD policy.			
FY 2010 Accomplishments: Reflected in PE 0603781D8Z: Software Engineering Institute (SEI)			
FY 2011 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P832: *Software Producibility/Technology from Non-Traditional Sources (TNTS) Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Reflected in PE 0603781D8Z: Software Engineering Institute (SEI) ***FY 2012 Plans:*** Continue workshops and technology assessment efforts to discover emerging technologies, evaluate their potential to fit DoD needs, and where appropriate conduct critical tests of the components or software under operational conditions.			
Accomplishments/Planned Programs Subtotals	-	-	4.160

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

NA

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the specific project plans. In addition, project completions and success are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target milestone dates, production measures, fielding dates, and demonstration goals. Generic performance metrics applicable to innovative technologies emerging from non-traditional sources includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on warfighting needs."

In FY 2012, investment decisions will be made during the execution year, to rapidly respond to combatant commander requirement and new threats/new opportunities as they relate to technologies emerging from non-traditional sources.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	105.656	111.946	58.130	-	58.130	52.045	53.076	54.140	55.135	Continuing	Continuing
P808: *Joint Experimentation*	105.656	111.946	58.130	-	58.130	52.045	53.076	54.140	55.135	Continuing	Continuing

Note

The Department of Defense is developing the Joint Experimentation Program strategy and objectives for FY 12 and beyond.

A. Mission Description and Budget Item Justification

Consistent with strategic guidance, the Joint Experimentation (JE) Program Element targets DoD's highest priority experimental needs, defined by combatant commands and Services, and synchronizes development of relevant and actionable Doctrine, Organizational, Training, Materiel, Leadership, Personnel, Facilities, and Policy (DOTMLPF-P) solutions to enable trained, ready and adaptable joint and coalition forces and improve capabilities of current and future Joint Force Commanders. The program is governed through the JCD&E Executive Council, which is composed of generals, admirals, and members of the Senior Executive Service representing the combatant commands and Services. The JE program is the key synchronizing program for a diverse portfolio of concept development and solution evaluation and validation focused on combatant command and Service problems defined in Integrated Priority Lists (IPL), Joint Urgent Operational Needs (JUON), and Warfighter Challenges (WFC). In addition to defining the problems, the combatant commands and Services prioritize the JE program of work and are active partners in the execution, oversight, and governance of the efforts. Partners also include a broad range of civilian agency, multinational, academic, and private sector partners. When appropriate, state and local governments participate in the development of solutions. Projects typically confirm critical joint mission capability gaps; identify potential remedies; explore a range of DOTMLPF-P solutions; and establish the best path to solving security challenges. The JE program is the Department's primary program to explore the connecting ideas and processes that cannot be solved by buying a new tool or creating a new acquisition program. Experiments span a spectrum from early efforts to develop new joint operational concepts, to refinement of joint doctrine, to scenario-based examination of science and technology-based solutions, to validation of non-material solutions such as organization structure, new processes, improved training and education, and recommended policy changes. By defining emergent shortfalls and exploring force enhancement options, JE serves as an early risk mitigation tool that precedes implementation of doctrine changes, capability demonstrations, acquisition investment decisions, and policy changes. JE supports the development of projected mission critical capabilities through rigorous, objective assessment of enabling processes and technologies, identification of capability/system requirements and innovative employment of existing capabilities in the context of scenarios depicting current and projected Defense operations. Combatant commanders and Services are the primary customers of projects funded by the JE Program, but through a whole of government approach, projects also provide collateral benefits to a wider Defense Experimentation Enterprise including Agencies and the Office of the Secretary of Defense (OSD), intra-government, international and Non-Government Organization (NGO) partners. The experiments funded by this program establish the path to resolve current joint warfighting deficiencies and lay the foundation for trained, ready and adaptive joint and coalition forces. The Assistant Secretary of Defense, Research & Engineering (ASD(R&E)) within the Office of the Secretary of Defense (OSD) provides oversight to ensure alignment with strategic guidance and emphasizes disciplined design and cost control of individual projects with meaningful results that can be assessed with metrics based on incremental force improvements. The experimentation efforts in this program align directly to the Key Mission Areas (KMA) outlined in the February 2010 Quadrennial Defense Review (QDR), the National Military Strategy, and the Secretary of Defense's Efficiency Initiatives. Flexibility will be maintained in the JE Program to address emergent requirements identified by combatant commanders and Services and will be prioritized by the JCD&E Executive Council. The Joint Staff J7 executes the

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*

JE program and leads the JCD&E Enterprise. The Joint Staff J7 works with the Assistant Secretary of Defense, Research & Engineering (ASD(R&E)) to provide responsive support to customers and partners.

The JE Program Element provides funding for the Department's Joint Experimentation (JE) effort, carried out by the JCD&E Enterprise, governed by an Executive Board composed of admirals, generals and Senior Executive Service members, and led by a JCD&E Executive Agent. The JCD&E Enterprise includes the combatant commands, the military services, the National Guard Bureau, the Joint Staff, the Office of the Secretary of Defense (OSD), and several Defense agencies. Intra-government agencies and coalition partners often participate in JCD&E processes and projects. The JE program element focuses on producing validated concepts and solutions to combatant command and Service defined problems. Important collateral benefits accrue to other members and partners in the extended experimentation community; much of the joint content in military "Title 10" wargames can be traced to coordination within the JCD&E Enterprise. To ensure the program focuses on needs of the warfighters, joint experiments originate from an annual call for nominations from combatant commands and Services, and from assessment of combatant command identified critical warfighting capability gaps articulated in combatant command Integrated Priority Lists and Joint Urgent Needs documents submitted, to the Chairman of the Joint Chiefs of Staff (CJCS). JE nominations undergo preliminary analysis by the JCD&E Enterprise to confirm suitability for experimentation, alignment to strategic guidance and, where feasible, to associate closely related subjects for economy of effort. The resultant list is termed Warfighter Challenges (WFCs), and constitutes experimentation efforts eligible for design and execution. These efforts are prioritized and approved by the combatant command and Service members of the Executive Council. Experimentation plans are developed in consultation with JE partners, and consolidated into an annual program of joint experimentation, known as the JCD&E Campaign Plan. The Executive Council meets regularly to review and approve the progress of the efforts in the campaign plan. The JCD&E Campaign Plan allows the Department to synchronize experimentation efforts over multiple years to avoid duplication of effort and to create synergy among the defense experimentation entities.

JE experiments and activities examine potential solutions for combatant command operational needs through targeted DOTMLPF-P improvements. JE tackles joint concept and capability issues demanding sophisticated analysis, innovative design and complex execution. JE addresses topics that would prove difficult for individual combatant commands and Services to capture in the context of their immediate operational and force generation responsibilities. Experiments and efforts produce a range of outcomes inclusive of fundamental joint doctrine, inputs to major policy documents such as the Quadrennial Defense Review and the Defense Planning and Programming Guidance (DPPG). In partnership with the combatant commands and Services, JE mitigates operational risk by establishing procedural models to conduct emergent concepts like Irregular Warfare, Integrated Financial Operations and Joint Operational Access that are not yet instantiated in conventional force generation. The results are briefed to Functional Capability Boards who integrate solutions into their functional investment plans.

JE examines joint concepts and develops exploratory concepts to describe how the Joint Force Commander will meet current and future security challenges, and explores joint capabilities required to execute those concepts. To support the continued transformation of the joint force even while it is engaged in operations around the world, joint concept development applies historical precedents, lessons learned from current operations, and Defense planning scenarios, then studies the projected joint operational environment to lay the conceptual foundation for the future force. After the current adjustment, a relatively stable investment projection for the JE Program drives aggressive efforts to derive greater return on investment for the DOD in the face of increasing demand for projects from combatant commands and joint experimentation partners.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603828D8Z: *Joint Experimentation*

Joint and Service experimentation are complementary efforts and require a unified approach. Joint experimentation focuses on the needs of the Joint Force Commander, while Service experimentation enables the components the Joint Force Commander will employ. Complementing the efforts undertaken by the JCD&E Executive Agent (USJFCOM and/or successor organization), other combatant commands conduct Limited Objective Experiments (LOEs) to address operational capability gaps and support identification of potential solutions for theater specific and functional joint warfighter needs, as part of the overall JCD&E campaign. Within the process, the JCD&E enterprise leverages Service wargame/experimentation to address joint challenges. Experimentation activities are coordinated within the JCD&E enterprise to cover gaps and pursue efficiency, and the results are shared throughout the enterprise. The collaborative planning effort of the JCD&E enterprise is intended to ensure coherent and transparent application of JE funds, joint context, and concepts capabilities are integrated into Service experimentation as appropriate.

A biennial report captures activities across the Defense Experimentation enterprise activities to inform Congress of program execution and project accomplishments.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	124.480	111.946	113.999	-	113.999
Current President's Budget	105.656	111.946	58.130	-	58.130
Total Adjustments	-18.824	-	-55.869	-	-55.869
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.000	-			
• SBIR/STTR Transfer	-1.424	-			
• Other Program Adjustments	-16.400	-	-	-	-
• Defense Efficiency - JFCOM Task Force	-	-	-54.215	-	-54.215
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-1.499	-	-1.499
• Economic Assumptions	-	-	-0.155	-	-0.155

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P808: *Joint Experimentation*		
Congressional Add: *Tidewater Full Scale Exercise*	2.320	-
Congressional Add Subtotals for Project: P808	2.320	-
Congressional Add Totals for all Projects	2.320	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*

Change Summary Explanation

Defense Efficiency – JFCOM Task Force. As part of the Department of Defense reform agenda, a review of the organization to align resources to the most critical departmental priorities and eliminate lower priority functions was performed. This reflects the current changes for FY12. Additional information will be provided when available.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P808: *Joint Experimentation*	105.656	111.946	58.130	-	58.130	52.045	53.076	54.140	55.135	Continuing	Continuing

A. Mission Description and Budget Item Justification

Consistent with strategic guidance, the Joint Experimentation (JE) Program Element targets DOD's highest priority experimental needs, defined by combatant commands and Services, and synchronizes development of relevant and actionable Doctrine, Organizational, Training, Materiel, Leadership, Personnel, Facilities, and Policy (DOTMLPF-P) solutions to enable trained, ready and adaptable joint and coalition forces and improve capabilities of current and future Joint Force Commanders. The program is governed through the JCD&E Executive Council, which is composed of generals, admirals, and members of the Senior Executive Service representing the combatant commands Services. The JE program is the key synchronizing program for a diverse portfolio of concept development and solution evaluation and validation focused on combatant command and Service problems defined in Integrated Priority Lists (IPL), Joint Urgent Operational Needs (JUON), and Warfighter Challenges (WFC). In addition to defining the problems, the combatant commands and Services prioritize the JE program of work and are active partners in the execution, oversight, and governance of the efforts. Partners also include a broad range of civilian agency, multinational, academic, and private sector partners. When appropriate, state and local governments participate in the development of solutions. Projects typically confirm critical joint mission capability gaps; identify potential remedies; explore a range of DOTMLPF-P solutions; and establish the best path to solving security challenges. The JE program is the Department's primary program to explore the connecting ideas and processes that cannot be solved by buying a new tool or creating a new acquisition program. Experiments span a spectrum from early efforts to develop new joint operational concepts, to refinement of joint doctrine, to scenario-based examination of science and technology-based solutions, to validation of non-material solutions such as organization structure, new processes, improved training and education, and recommended policy changes. By defining emergent shortfalls and exploring force enhancement options, JE serves as an early risk mitigation tool that precedes implementation of doctrine changes, capability demonstrations, acquisition investment decisions, and policy changes. JE supports the development of projected mission critical capabilities through rigorous, objective assessment of enabling processes and technologies, identification of capability/system requirements and innovative employment of existing capabilities in the context of scenarios depicting current and projected Defense operations. Combatant commanders and Services are the primary customers of projects funded by the JE Program, but through a whole of government approach, projects also provide collateral benefits to a wider Defense Experimentation Enterprise including Agencies and the Office of the Secretary of Defense (OSD), intra-government, international and Non-Government Organization (NGO) partners. The experiments funded by this program establish the path to resolve current joint warfighting deficiencies and lay the foundation for trained, ready and adaptive joint and coalition forces. The Assistant Secretary of Defense, Research & Engineering (ASD(R&E)) within the Office of the Secretary of Defense (OSD) provides oversight to ensure alignment with strategic guidance and emphasizes disciplined design and cost control of individual projects with meaningful results that can be assessed with metrics based on incremental force improvements. The experimentation efforts in this program align directly to the Key Mission Areas (KMA) outlined in the February 2010 Quadrennial Defense Review (QDR), the National Military Strategy, and the Secretary of Defense's Efficiency Initiatives. Flexibility will be maintained in the JE Program to address emergent requirements identified by combatant commanders and Services and will be prioritized by the JCD&E Executive Council. The Joint Staff J7 executes the JE program and leads the JCD&E Enterprise. The Joint Staff J7 works with the Assistant Secretary of Defense, Research & Engineering (ASD(R&E)) to provide responsive support to customers and partners.

The JE Program Element provides funding for the Department's Joint Experimentation (JE) effort, carried out by the JCD&E Enterprise, governed by an Executive Board composed of admirals, generals and Senior Executive Service members, and led by a JCD&E Executive Agent. The JCD&E Enterprise includes the combatant

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

commands, the military services, the National Guard Bureau, the Joint Staff, the Office of the Secretary of Defense (OSD), and several Defense agencies. Intra-government agencies and coalition partners often participate in JCD&E processes and projects. The JE program element focuses on producing validated concepts and solutions to combatant command and Service defined problems. Important collateral benefits accrue to other members and partners in the extended experimentation community; much of the joint content in military "Title 10" wargames can be traced to coordination within the JCD&E Enterprise. To ensure the program focuses on needs of the warfighters, joint experiments originate from an annual call for nominations from combatant commands and Services, and from assessment of combatant command identified critical warfighting capability gaps articulated in combatant command Integrated Priority Lists and Joint Urgent Needs documents submitted, to the Chairman of the Joint Chiefs of Staff (CJCS). JE nominations undergo preliminary analysis by the JCD&E Enterprise to confirm suitability for experimentation, alignment to strategic guidance and, where feasible, to associate closely related subjects for economy of effort. The resultant list is termed Warfighter Challenges (WFCs), and constitutes experimentation efforts eligible for design and execution. These efforts are prioritized and approved by the combatant command and Service members of the Executive Council. Experimentation plans are developed in consultation with JE partners, and consolidated into an annual program of joint experimentation, known as the JCD&E Campaign Plan. The Executive Council meets regularly to review and approve the progress of the efforts in the campaign plan. The JCD&E Campaign Plan allows the Department to synchronize experimentation efforts over multiple years to avoid duplication of effort and to create synergy among the defense experimentation entities.

JE experiments and activities examine potential solutions for combatant command operational needs through targeted DOTMLPF-P improvements. JE tackles joint concept and capability issues demanding sophisticated analysis, innovative design and complex execution. JE addresses topics that would prove difficult for individual combatant commands and Services to capture in the context of their immediate operational and force generation responsibilities. Experiments and efforts produce a range of outcomes inclusive of fundamental joint doctrine, inputs to major policy documents such as the Quadrennial Defense Review and the Defense Planning and Programming Guidance (DPPG). In partnership with the combatant commands and Services, JE mitigates operational risk by establishing procedural models to conduct emergent concepts like Irregular Warfare, Integrated Financial Operations and Joint Operational Access that are not yet instantiated in conventional force generation. The results are briefed to Functional Capability Boards who integrate solutions into their functional investment plans.

JE examines joint concepts and develops exploratory concepts to describe how the Joint Force Commander will meet current and future security challenges, and explores joint capabilities required to execute those concepts. To support the continued transformation of the joint force even while it is engaged in operations around the world, joint concept development applies historical precedents, lessons learned from current operations, and Defense planning scenarios, then studies the projected joint operational environment to lay the conceptual foundation for the future force. After the current adjustment, a relatively stable investment projection for the JE Program drives aggressive efforts to derive greater return on investment for the DOD in the face of increasing demand for projects from combatant commands and joint experimentation partners.

Joint and Service experimentation are complementary efforts and require a unified approach. Joint experimentation focuses on the needs of the Joint Force Commander, while Service experimentation enables the components the Joint Force Commander will employ. Complementing the efforts undertaken by the JCD&E Executive Agent (USJFCOM and/or successor organization), other combatant commands conduct Limited Objective Experiments (LOEs) to address operational capability gaps and support identification of potential solutions for theater specific and functional joint warfighter needs, as part of the overall JCD&E campaign. Within the process, the JCD&E enterprise leverages Service wargame/experimentation to address joint challenges. Experimentation activities are coordinated within the JCD&E enterprise to cover gaps and pursue efficiency, and the results are shared throughout the enterprise. The collaborative planning effort of the JCD&E

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

enterprise is intended to ensure coherent and transparent application of JE funds, joint context, and concepts capabilities are integrated into Service experimentation as appropriate.

A biennial report captures activities across the Defense Experimentation enterprise activities to inform Congress of program execution and project accomplishments.

Description (JE Program): The JE Program delivers relevant, sufficient, and necessary DOTMLPF-P comprehensive solutions responding to specific needs of Joint Force Commander articulated Warfighter Challenges. Warfighter Challenges are DOD's most important security challenges now and in the future; inform and are informed by strategic guidance; and address issues from the tactical to strategic levels of war. From the perspective of OSD engagement and oversight, emphasis will be focused on the following refinements to influence the JE business model.

Refinements to the JE Business Model.
The JE program is executed through a global business model that is governed by a 2-Star Executive Council, operates on a 1 year cycle, supported by integrating technologies to close geographic gaps, standardized through systems engineering discipline, and progresses through formal enterprise decision making. Lean principals are applied to enterprise, technical, and supporting processes to maximize program efficiency. The JE program continues to evolve with solution spirals included in experimentation efforts to drive affordable speed to capability.

The JCD&E Enterprise strives to:
• Trace JE efforts to discriminate changes to joint capabilities.
• Tie JE closer to DoD operational analysis & Defense Planning Scenarios.
• Provide specific input to joint training and joint capability development to ensure adaptable joint forces.
• Position joint experimentation in a larger scheme of overarching capability development that begins with lessons learned and critical analysis, enjoins experimentation tools, and progresses through demonstration, acquisition, and training.
• Design experiments for more responsive deliverables through quicker starts, event-driven "go/no go" reviews, and incremental designs permitting faster "do-learn-decide" cycles for continued investment.

Analytical Rigor.
Increased emphasis has been placed on adherence to standards of analytical rigor in design, conduct, and exploitation of experiments. Typical of this rigor is aligning the experimentation concepts to the Key Mission Areas specified in the Quadrennial Defense Review. FY 2011-2012 experimentation efforts seek to provide innovative joint solutions and joint interoperability standards to address capability shortfalls identified by Warfighter Challenges conforming to the DoD Joint Capability Areas (JCAs) employed by the Department to validate joint needs. The FY 2012 Warfighter Challenges mapped to six JCAs: Building Partnerships, Battlespace Awareness, Command and Control, Force Application, Logistics, and Net-Centric. No FY12 WFCs were submitted by the COCOMs or Services in the JCAs. The JE enterprise is capable and prepared to accept Warfighter Challenges from all nine JCA's and accepts emergent requirements throughout the year.

Initiatives.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

- Solution spin offs (spirals), are included in experiment design to identify affordable capability deliveries and increase speed to capability.
- Lean six sigma principals have been implemented for metrics based efficiency assessments. Achieved 46 percent improvement in contracting process, 26% cycle time/17% cost reduction in enterprise process, and 31% reduction in experimentation conduct. - Integrated framework for Joint Experimentation. Transparent decision-making, systems engineering thinking, and application of Lean management principles have been integrated into a technical framework for lifecycle management of the joint experimentation program. JCD&E Enterprise members now submit WFCs with supporting technical information that promotes accelerated starts, spiral development and reduced costs and schedules for experimentation and concept development.
- Improvements to Networked Coordination. Upgrade of the Virtual Operations Center (VOC) has enhanced Enterprise-wide participation during project planning and execution, decreasing travel associated with customer service and enterprise-wide coordination. Increasing use of distributed experimentation design will allow geographically separated groups to join experimental projects from their home bases, again saving travel funds and increasing the potential partner base.
- Increased integration with the S&T community to address the science and technology element COCOM S&T Integrated Priority Lists in JE, and to both include Joint Capability Technology Demonstrations (JCTD) in, and inform JCTD efforts through, experimentation to Increase speed to capability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Building Partnerships (BP)	15.465	15.738	8.514
Description: The evolving nature of joint operations creates a corresponding need to integrate operations with international, governmental and non-governmental partners to address a wide variety of security challenges using a comprehensive approach. ***FY 2010 Accomplishments:*** • Refined Joint Force Commander ability to apply fiscal resources & capabilities to separate the population from insurgents and destroy/disrupt enemy financial networks through development and publishing of an Integrated Financial Operations (IFO) operating concept. Concept was tested in two operational environment scenarios, Afghanistan and CJTF Horn of Africa. Concept received strong positive response from all (civilian and military) participants in the IFO process. • Streamlined and improved DOD interagency campaign planning through development and submission of a DOTMLPF-P Change Request (DCR), that when approved, will enable DOD theater campaign plans to be more complementary and supportive of the larger USG approach to steady-state activities. Products included three seminal documents guiding curriculum development in the military training base. The Naval War College and the Army's Peacekeeping and Stability Operations Institute (PKSOI) use these documents to enhance joint professional military education (JPME) curricula and to improve UN Department of Peacekeeping Operations doctrine. • Provided solutions to multinational challenges of irregular warfare through accomplishment of nine experimental objectives. Military and civilian agencies of 18 countries and NATO developed improved coalition capabilities to counter irregular adversaries and other non-compliant actors within a comprehensive approach. Objectives concentrated on improving a coalition's ability to build partnerships and sought to mitigate non-compliant actors, support host nation governance, harmonize efforts of coalition partners, develop a framework for strategic communication, share methods for campaign assessment, and increase cultural awareness.			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Provided DOD with interagency-endorsed capabilities to coordinate the formal establishment of a Deployable Security Sector Assessment and Assistance Team (DSSAAT), an organization offering the cross-sector expertise required to participate in security sector reform. Capabilities included an operating concept, organizational construct and procedures that were validated through support to CENTCOM's JTF-435 in Afghanistan, and field experimentation as part of a Department of State-led US Government assessment in Albania to support US European Command (EUCOM) Theater Cooperation Planning. Provided combatant commanders' and ambassadors' the capability to develop Theater Cooperation Plans (TCPs) and Mission Strategic Plans (MSPs) through the creation of an in-theater tested security sector reform capability.			
FY 2011 Plans:			
• Deliver a prototype system to allow real-time information sharing and collaboration with interagency and multi-national partners in support of a whole of government approach to steady-state operations. The prototype technical architecture and capability will be validated through experimentation in USAFRICOM and USEUCOM with multiple mission partners and provide a residual capability to allow the continued development of habitual relations. Partners will include a broad range of DOD, applicable non-DOD/ USG agency, multi-national, multi-lateral, and private sector mission partners. Additionally, enhanced information sharing capability between partner states will contribute to increased cooperation in counter-insurgency, stability and counter-terrorism operations. • Create a Service force generation model/architecture that will improve national capability to synchronize integrated General Purpose Forces and Special Operations Forces (GPF/SOF) Security Force Assistance (SFA) activities. Effort will improve geographic combatant commands and US embassy country teams to satisfy SFA demand signals. Project will improve understanding of Service force generation models and resource application/prioritization. Experimentation will be used to compare solutions for identification of specific roles and responsibilities, prioritization and integration of planning and execution of SFA activity. Planned products are: SFA Operating Concept/Framework, organizational construct, decision support and planning tools, recommendations for SFA lead roles and responsibilities.			
FY 2012 Plans:			
• The FY 2012 JCD&E program of work in the Building Partnerships Joint Capability Area (JCA) will address the key mission areas identified in the Quadrennial Defense Review and highlighted in the Defense Planning and Programming Guidance. The FY 2012 campaign will address projected mission critical capabilities and concepts required to build security capacity of partner states. The scope of the work will include: security and engagement activities per the Capstone Concepts for Joint Operations (CCJO) and experimentation to identify and evaluate enabling technologies to increase US capability to increase the security capacity of partner states. The specific focus areas identified for FY 2012 include: • Strengthen and institutionalize General Purpose Force capabilities in conducting security force assistance missions • Increase socio-cultural/ human terrain awareness of the force • Increase information sharing capacity between US and partner states and within partner states			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Develop collaborative planning and assessment tools to support of security force operations • Improve effective and efficient methods to provision logistical support to partner states • Five Warfighter Challenges (14 percent of total submissions) were submitted by the JCD&E Enterprise identifying deficiencies in the BP JCA to be addressed through joint experimentation.			
Title: Battlespace Awareness (BA) ***Description:*** The evolving nature of joint operations creates a corresponding need to understand complex and dynamic environments through collection, synchronization and visualization of information across all domains, and sharing with interagency and multinational partners. ***FY 2010 Accomplishments:*** • Refined persistent surveillance processes by creating a standardized, repeatable methodology focused on planning, execution, re-tasking, and assessing. Developed and validated through experimentation more responsive and reactive support to operational commanders. Capabilities included architecture, CONOP and DOTMLPF-P recommendations, with Tactic, Techniques and Procedures (TTPs) to guide joint operators. Initial results from experimentation validated an improved process for Afghanistan AOR to reduce planning time for deliberate and dynamic retasking of ISR assets by 51 percent with demonstrated 18 percent increase in asset utilization. • Transitioned capabilities to improve integration and interoperability of Counter Intelligence/Human Intelligence. Capabilities included TTPs and DOD Architectural Framework (DODAF) compliant architectures, CI and HUMINT System Interoperability Report, and proposed changes to the Defense HUMINT Manual. • Improved Joint Force Commander's ability to interdict weapons of mass destruction by delivering a Radio-Nuclear Stand-Off Detection Concept of Operations with Maritime and Land Concept of Employment. ***FY 2011 Plans:*** • Deliver an experimentally validated assessment prototype for Deterrence Operations (DO) course of action assessments. Prototype capability will enable the Joint Force Commander to assess results and implications of whole of government pre-crisis deterrence actions before and after actions are taken. Planned products are: DO Assessment Guide, Preliminary Decision Support Tool (DST) Evaluation & Recommendations, Process map, Operational architecture, DST(s) Evaluation and Recommendations, Joint Capability Technology Demonstration (JCTD) input, and Prototype capability package. ***FY 2012 Plans:*** • The FY 2012 JCD&E program of work in the Battlespace Awareness JCA will address the key mission areas identified in the Quadrennial Defense Review and highlighted in the Defense Planning and Programming Guidance. The FY 12 campaign	13.967	7.640	8.269

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
will address projected mission critical capabilities and concepts required to succeed in preventing proliferation and countering weapons of mass destruction. • The scope of the work may include experimentation to identify and evaluate enabling technologies that lengthen detection ranges and strengthen ISR and communications ties between special and general purpose forces. • Five Warfighter Challenges (14 percent of total submissions) were submitted by the JCD&E Enterprise identifying deficiencies in the BA JCA to be addressed through joint experimentation.			
Title: Command and Control (C2) ***Description:*** Joint force commander requires secure, robust and reliable networks to provide responsive command and control in complex, chaotic and degraded information environments to integrate and share information with a full range of partners. ***FY 2010 Accomplishments:*** These Command and Control accomplishments resulted from projects with primary focus in the Building Partnership (BP) and Force Application (FA) JCA's. Funding was shown under the BP and FA JCA's. • Enabled the Joint Force Commander to conduct operations in a complex environment exercising command and control of a coalition force combating an irregular adversary. Experimentation aligned functional competencies to optimize actions, assess campaign progress, create and assess a communications strategy, create situational understanding and apply cultural understanding to enhance the planning process. • Redefined apportionment & allocation processes for joint command and control enablers to support distributed operations in complex & uncertain terrain. Provided CONOPs and TTPs identifying the command and control structure and joint enabling capabilities necessary to support integrated joint maneuver and engagement and rapid disaggregation and/or re-aggregation of distributed units. ***FY 2011 Plans:*** • In collaboration with interagency and multi-national partners, deliver complementary concepts and capabilities to deter, prevent and respond to a disruption or a denial of access to Global Commons. Concepts and capabilities will be validated through joint and multi-national experimentation. This effort will mitigate risk of disruption and denial of access to and use of the maritime, air, space and cyber space domains by state and non-state actors. Denial of access would limit US and coalition ability to conduct commercial and military operations. • Develop C2 architectures that support readiness reporting, sustainment of forces, and operations in C2 denied and degraded environments. These architectures will be validated through joint experimentation and will support the JFC's ability to assess, respond to, and incrementally restore C2 in a denied and degraded communications environment. Planned products are: JFC	-	14.738	14.886

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
C2 continuity processes and technologies, C2 templates and architectures, Multi-Service TTPs, CONOPS, and C4 training recommendations. ***FY 2012 Plans:*** • The FY 2012 JCD&E program of work in the Command and Control JCA will address the key mission areas identified in the Quadrennial Defense Review and highlighted in the Defense Planning and Programming Guidance. The FY 2012 campaign will address projected mission critical capabilities and concepts required to succeed in operating effectively in cyberspace. • The scope of work may include experimentation to identify and evaluate enabling technologies that support command and control for battle management in cyberspace. • Nine Warfighter Challenges (26 percent of total submissions) were submitted by the JCD&E Enterprise identifying deficiencies in the C2 JCA to be addressed through joint experimentation.			
Title: Force Application (FA) ***Description:*** Joint Force Commander requires improved kinetic or non-kinetic capabilities to maneuver and engage adversaries from political, strategic, operational, and tactical perspectives. ***FY 2010 Accomplishments:*** • Provided conceptual basis for revision to joint doctrine, joint force development, and conduct of future joint operations. Developed four activity concepts to complement the Capstone Concept for Joint Operations (CCJO). The activity concepts identified future joint capabilities required to address Combat, Security, Engagement, and Relief and Reconstruction activities as they relate to the future joint operating environment. • Redefined apportionment & allocation processes for joint enablers (e.g. ISR, fires and logistics) to support distributed operations in complex & uncertain terrain. Provided CONOPs and TTPs identifying the command and control structure and joint enabling capabilities necessary to enable integrated joint maneuver and engagement and rapid disaggregation and/or re-aggregation of distributed units. ***FY 2011 Plans:*** • Develop network attack/exploit concept of operations, organizational construct, processes and enabling authorities/policies to strengthen ability to attack and exploit adversary critical infrastructure. This effort will validate concept of operations, processes and tools through experimentation and M&S. Products will include Critical Infrastructure Computer Network Attack/Exploitation concept of operations and decision support tool/methodology that provides visibility of adversary critical infrastructure (networks and systems). • Develop a concept that describes how the Joint Force Commander will gain and maintain access by defeating anti-access capabilities in the hands of state and non-state actors, in order to project power and influence. This effort will integrate joint	22.302	9.991	11.577

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
experimentation with Title 10 experiments and other Service products and studies (e.g., Navy SSG, Army-Marine Staff Talks, and Air Force-Navy Air Sea Battle Concept, TRADOC JFEO Study) to explore and develop a joint concept. Aggressive red teaming will be used to explore the concept and validate the experimentation results. Products will include a summary of vulnerabilities and recommended capabilities, CJCS Red Team report, input to the Status & Recommendations Report, and a final concept approved/signed by CJCS. ***FY 2012 Plans:*** • The FY 2012 JCD&E program of work in the Force Application JCA will address the key mission areas identified in the Quadrennial Defense Review and highlighted in the Defense Planning and Programming Guidance. The FY 2012 campaign will address projected mission critical capabilities and concepts required to deter and defeat aggression in an anti-access environment. • The scope of work may include experimentation to identify and evaluate enabling technologies that focus on electronic warfare, long range strike, and undersea superiority. • Seven Warfighter Challenges (20 percent of total submissions) were submitted by the JCD&E Enterprise identifying deficiencies in the FA JCA to be addressed through joint experimentation.			
Title: Logistics (Log) ***Description:*** Joint Force Commander requires responsive, agile logistics support to project force, sustain operations and ensure freedom of action wherever the force engages and in whatever form the engagement takes. ***FY 2010 Accomplishments:*** • Enabled synchronization of logistics operations by providing a CONOP for USAFRICOM logistics planning and execution. Initial CONOP informed development of the Joint Staff J4 Joint Logistics Concept Paper, with potential application to multiple combatant commands. • Improved the Joint Force Commander's ability to project and sustain geographically separated forces operating independently or in concert in a complex operational environment by development and delivery of products including a Logistics Annex to the JDO Concept of Operations/Handbook, doctrine change recommendations to JP 4 series, and input to USTRANSCOM Future Deployment and Distribution Analysis. • Improved logistics situational awareness for the International Security Assistance Force (ISAF) Commander in Afghanistan, and commanders within contributing nations. Facilitated process and policy changes and developed tool prototypes, including a quick reference guide for Logistics Functional Area Services and Reporting that enabled a more effective and efficient exchange of information in the ISAF theater of operations. ***FY 2011 Plans:***	13.084	6.389	8.269

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Assess sufficiency of the Joint Logistics Concept (JLC) to integrate, synchronize and optimize the logistics enterprise to support joint operations in a wide variety of anticipated challenges in the future operating environment. Through joint experimentation, the following aspects of the JLC will be assessed: integration and synchronization of end-to-end logistics processes; delivering, positioning and sustaining joint forces to and from any location; and networking of the joint logistics enterprise in a real-time global information system. Results of this experimentation will be used by the Joint Staff to inform investment decisions. Products will include: Capability Gap Analysis Report; Logistics Enterprise Solution Evaluation; DOTMLPF-P Recommendations. ***FY 2012 Plans:*** • The FY 2012 JCD&E program of work in the Logistics JCA will address the key mission areas identified in the Quadrennial Defense Review and highlighted in the Defense Planning and Programming Guidance. The FY 2012 campaign will address projected mission critical capabilities and concepts required to build the security capacity of partner states. • The scope of work may include experimentation to identify and evaluate enabling technologies that create mechanisms to facilitate more rapid transfer of critical materiel. • Five Warfighter Challenges (14 percent of total submissions) were submitted by the JCD&E Enterprise identifying deficiencies in the Log JCA to be addressed through joint experimentation.			
Title: Protection (P) ***Description:*** Joint Force Commander lacks sufficient ability to detect, prevent and mitigate adverse effects of attacks on personnel (combatant/non-combatant) and physical assets of the United States, allies and friends. ***FY 2010 Accomplishments:*** • Engaged with key interagency partners and OSD to close capability gaps in WMD mission areas by developing organizational and operational constructs for DOD to detect, interdict, and seize, destroy or defeat nuclear yield devices. This was done by providing an organizational and operational construct to better synchronize detection, interdiction, seizure, destruction or defeat of nuclear yield devices. This effort focused on the authorities, responsibilities, intelligence requirements and operational concepts. • Identified requirements and developed concepts/TTPs to employ current and near-term capabilities to counter irregular adversaries' use of advanced weapons systems to disrupt airspace operations. • Based on feedback from the JCD&E Enterprise and analysis of ongoing production across DoD, it was determined that applying joint experimentation resources to the problems of countering the use of biological agents as weapons of mass destruction (WMD) and countering irregular adversaries' use of advanced weapons systems to disrupt airspace operations was not necessary. Resources allocated to these efforts were redirected to new, urgent joint experimentation needs identified by combatant commands and the Services. ***FY 2011 Plans:***	21.552	21.263	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Develop a Ballistic Missile Defense (BMD) C2 architecture and prototype to reduce gaps and disconnects within Geographic Combatant Commands (GCCs) and between GCCs, allies and partners. The C2 architecture and prototype will be evaluated through experimentation, M&S and real world exercise events. Planned products are: Global C2 BMD Integration Guide, prototype C2 architecture/structure and DOTMLPF-P recommendations. • Develop an implementation guide and decision/planning tools that support implementation of a phased adaptive approach to ballistic missile defense (PAA BMD) in defense against threats to the homeland, allies, partners and US forces abroad. In coordination with the Missile Defense Agency and Joint Integrated Air and Missile Defense Organization (JIAMDO), experimentation will contrast current and programmed PAA BMD capabilities using M&S to conduct an analytical wargame in order to determine and validate allocation, prioritization, deployment, employment, risk and burden-sharing recommendations. In addition, this effort will identify PAA force development and operational implications to mitigate future risks. Planned products are: decision/planning tools (risk assumption, burden-sharing, force allocation, prioritization and deployment), PAA Implementation Guide Book and DOTMLPF-P recommendations. • Develop and provide an experimentally validated Countering Precision Guided Munitions (CPGM) Concept and concept of operation. This effort will improve joint force ability to plan, execute, and employ friendly capabilities in operations against irregular adversaries with access to significant numbers of precision guided munitions. ***FY 2012 Plans:*** • Based on work accomplished in FY 2010 and FY 2011, and absence of specific Protection JCA FY 2012 joint experimentation requirements from COCOMs, it is expected that FY 2012 accomplishments in this JCA will be generated as byproducts from work in other areas.			
Title: Net Centric (NC) ***Description:*** Joint Force Commander requires the ability to provide a framework for full human and technical connectivity and interoperability that allows all DOD users and mission partners to understand and act on with confidence, and protects information from those who should not have it. ***FY 2011 Plans:*** • Develop Computer Network Defense (CND) concept of operations, organizational construct, procedures, and enabling authorities/policies to strengthen the defense of critical infrastructure. This effort will validate the concept of operation and procedures through experimentation and Modeling and Simulation. Products will include Critical Infrastructure CND concept of operations and CND decision support tool/methodology focused on situational awareness and defense of critical infrastructure (networks and systems). ***FY 2012 Plans:***	-	10.937	6.615

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• The FY 2012 JCD&E program of work in the Force Application JCA will address the key mission areas identified in the Quadrennial Defense Review and highlighted in the Defense Planning and Programming Guidance. The FY 2012 campaign will address projected mission critical capabilities and concepts required to deter and defeat aggression in anti-access environments. • The scope of work may include experimentation to identify and evaluate enabling technologies that focus assuring access to space and use of space-based assets. • Four Warfighter Challenges (12 percent of total submissions) were submitted by the JCD&E Enterprise identifying deficiencies in the BP JCA to be addressed through joint experimentation.			
Title: Combatant Command, Service Experimentation Support (CCSES) ***Description:*** Combatant command, Service Experimentation Support enables the combatant commands and Services to conduct experimentation within the joint context in order to build enterprise capacity and to integrate solutions across DOD. This leads to collaborative development, participation and support that inform the warfighter challenges and joint concepts. It provides joint context to Service experimentation through collaborative design, analysis, planning and execution ***FY 2010 Accomplishments:*** Combatant Command Experimentation • Supported USNORTHCOM with joint analysis and consequence management subject matter expertise for two limited objective experiments to revise the Homeland Defense and Civil Support Joint Operating Concept version 4.0. • Supported USSTRATCOM with facilities and network architecture to execute Nimble Titan 10 that explored coalition mission defense policy, challenges, and solutions. • Provided experiment design/control and joint analysis support to USEUCOM/USAFRICOM/USTRANSCOM in execution of Theater Lift/Point of Need Delivery (POND). When complete, this project will determine near, mid, and long term solution to deliver within three to five days a ready-to-employ, task organized element up to brigade-sized or equivalent, to or from a point-of-need, independent of receptive infrastructure. Joint Service Experimentation • Army – Unified Quest 10: Supported the Army's Training and Doctrine Command with joint analysis for major irregular warfare experimentation efforts within the Unified Quest 10 campaign of learning. • Army – Earth, Wind, and Fire 10: Supported the Army's Training and Doctrine Command with joint analysis to inform the Joint Air Ground Integration Cell to provide solutions to airspace de-confliction and integration.	10.644	19.038	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Air Force – Unified Engagement 10: Provided joint analysis and planning resources to provide solutions to warfighter challenges and Chief of Staff, Air Force objectives. • Marines – Expeditionary Warrior 10: Supported the Marine Corps Warfighting Laboratory with joint analysis and subject matter expertise to inform the Seabasing concept. ***FY 2011 Plans:*** Combatant Command Experimentation • Support USSOCOM with joint analysis to complete the Final Report on Global Scout 11. • Support USPACOM with laboratory capacity to conduct Cyber Experimentation. • Support USEUCOM with joint analytical capacity to conduct Socio-Cultural Analysis. • Provide program and analytical support to USEUCOM to transition Point-Of-Need Delivery (POND). • Enabled distributed, combatant command-led experimentation in the following areas: • Cyberspace Joint Operational Concept Experimentation (USSTRATCOM) • Building Partnership Capacity – Mexico Experimentation (USNORTHCOM) • Cyber Warfare Experimentation (USPACOM) • Electronic Warfare Experimentation (USPACOM) • Joint Anti-Submarine Warfare Experimentation (USPACOM) • Countering Anti-Access Technologies Experimentation (USPACOM) • Support emergent, time-sensitive combatant command requirements as funding and priorities permit. Joint Service Experimentation • Army – Unified Quest 11: Support the Army's Training and Doctrine Command with joint analysis for the Unified Quest 11 campaign of learning. • Navy – Global 11: Support the U.S. Naval War College with joint analysis to prepare the final report on Navy's Global 11 war game. • Air Force – Unified Engagement 11: Support the Air Force with joint analysis perspective in development of the final report on Unified Engagement 11. • Marine Corps – Expeditionary Warrior 11: Provide joint context and analysis support to the Marine Corps Warfighting Laboratory in development of the final report on Expeditionary Warrior 11.			
Title: Joint Urban Operation (JUO) / Joint Irregular Warfare Center (JIWC)	5.189	5.100	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

Description: Joint Urban Operations (JUO) – To ensure DOD is prepared to dominate future threats and deny sanctuary to our adversaries in urban areas, the Secretary of Defense assigned Commander, U.S. Joint Forces Command (USJFCOM) as the DOD Executive Agent (EA) for Joint Urban Operations (JUO). JUO Lines of Joint Experimentation (LOJX) projects will provide the Joint Force Commander with the ability to lead, coordinate, and integrate the urban operations doctrine, organization, training, and equipment activities of the DOD Components and improve and transform the capabilities of joint forces in conducting urban operations over the full range of urban contingencies. To execute the mission, USJFCOM established the DOD JUO Program. In 2008, the JUO program and the DOD EA for JUO mission were subsumed into the USJFCOM Joint Irregular Warfare Center (JIWC), led by the JIWC Director who was assigned to execute JUO Executive Agent responsibilities for Commander, USJFCOM.

FY 2010 Accomplishments:

- Supported technical development efforts to enhance and accelerate fielding capabilities critical to success in current and future complex, urban, and irregular operations including, cargo unmanned aircraft systems (UAS) demonstration and assessment, non-lethal unmanned aerial vehicle (UAV) program initial hybrid/asymmetric target set assessment and geospatial analysis and planning support (GAPS) toolkit .
- In conjunction with Army Test and Evaluation Command and OSD Test Resource Management Center (TRMC), completed Urban Environment Test Capabilities (UETC) Needs Analysis Report.
- Identified Joint Urban Operations (JUO) unique gaps with recommended DOTMLPF approaches to mitigate the gaps for the twelve (12) capabilities defined by the JUO Joint Integrating Concept (JIC).
- Developed the JUO Master Plan as the overarching strategy to provide direction to DOTMLPF-P initiatives and supporting Joint Capability Integration & Development System (JCIDS) documentation.
- Executed discovery seminar wargames with multi-national, interagency, and academic partners to develop understanding of how to positively influence relevant populations and foster multi-national support during conflict "shaping" in complex operational environments and when required defeat adversaries embedded within urban areas while protecting the population and society. (Joint Urban Warrior 09 which continued into FY10 and US-Israel Hybrid Threat Seminar)
- Conducted Irregular Warfare Training Simulator Integrated Product Team (IWTSIPT) Report that identified and consolidated persistent IW training simulation capability gaps to include the inability to replicate complex/urban environments scenarios and actors, which will be used in determining allocation of Resource Management Decision (RMD) 700 funds to the Services to address small unit training deficiencies. In addition to identifying capability gaps, the IWTSIPT also identified near and long term mitigation strategies.
- Provided Subject Matter Expertise to NATO Allied Command Transformation in support of the development of the “Military Contribution to Countering Hybrid Threats Capstone Concept”.
- Participated in the conduct of the seminar wargame “Joint Irregular Warfare 2010” with cosponsors USSOCOM and the USMC, Center for Irregular Warfare that examined the joint forces’ ability to conduct irregular warfare, identify gaps in the ability to enable,

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
support and sustain distributed operations, and opportunities to execute a comprehensive approach to conflict where defense synthesizes with diplomacy and development. ***FY 2011 Plans:*** • Continue development, articulation and refinement of DOD Joint Urban Operations Master Plan, as a comprehensive document describing DOD's approach to lead, coordinate, and integrate urban operations doctrine, organization, training, and equipment that transform the capability to conduct urban operations. • Conduct analysis of emerging urban materiel solutions to address prioritized urban gaps areas to include capability review/ technology assessment of relevant efforts within battlespace awareness, force application or protection. • Assess the urban environment test solutions of the Joint Urban Test Capability (JUTC) Program to determine progress in mitigating gaps identified in the UETC Report and DOD's ability to replicate, simulate and emulate the urban environment for test and evaluation (T&E). • Lead and coordinate efforts to identify and expand M&S capabilities related to the small unit training simulations and urban environment to optimize service programs and ensure immersive training capabilities/technologies are provided for ground units within Close Combat Infantry Immersive Training. • Lead and coordinate efforts to identify gaps/shortfalls, assess potential solutions, and make prioritized recommendations to ensure integration of IW and JUO capability development activities across the Joint Capability Integration Development System, Defense Acquisition System, and the Planning, Programming, and Budget Execution and other DOTMLPF-P process. • Continue established discovery seminar wargames to build on work optimizing joint and coalition force activities in complex environments. Extend network of multi-national, interagency, and academic partners to advance understanding of how to positively influence relevant populations, when required, defeat adversaries embedded and diffused within urban areas. (Joint Irregular Warfare 10 concepts carrying into FY11 and US-Israel Hybrid Threat Seminar). • Plan and conduct the Joint Urban Wargame 2011 in order to determine the capability and capacity to systematically assess the critical functions, processes, and structures of an urban system and its embedded adversaries. This includes identifying critical functions, processes and structures of an urban system and its embedded adversaries that must be understood to enable integrated planning and execution of military and non-military actions in an urban operational environment, and identify measures of success for military and non-military actions in an urban environment. • Partner with NATO to wargame the "Military Support to Countering Hybrid Threats" concept in order to gain the NATO Military Committee's endorsement of the concept and tasking to accomplish future work.			
Title: Joint Futures Group ***Description:*** The Joint Futures Group (JFG) is a unique DoD team specifically focused on identifying the next big challenges or opportunities for the joint force and Combatant Commanders that are not being addressed elsewhere in DoD. It is a unique	1.133	1.112	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

entity within DoD that utilize analytic and research processes integrates doctoral level future thinking and extrapolates likely future operational environments within which innovative ideas about challenges and military implications for the Department of Defense are generated. The JFG integrates the results of its “futures” research into downstream processes for concept and development, experimentation scenarios, capabilities definition, doctrine, and inclusion in the majority of professional military education (PME). Their unclassified professionally developed products are globally disseminated and inform every Service, Combatant Command and all of our multinational partners. "We must focus concept development on the specific problems identified in the Joint Operating Environment or on identified gaps in doctrine…" – General Mattis

The objective of the JFG is to provide a vision of the future and support identification and articulation of joint force implications, through collection, analysis, synthesis, dissemination of the world's strategic and international relations futures. The current means of articulation is the Joint Operating Environment (JOE) report. Unlike other classified DIA or JCS “future focused” documents the unclassified JOE provides the foundational problem statement for the CJCS’s Capstone Concept for Joint Operations (CCJO), and is intended to inform the development of Joint Operating Concepts and Joint Integrating Concepts, as well as to provide a framework for Combatant Command and Service LOEs and experiments through its vision of the future. The JOE has been downloaded globally well over two million times in the past two years and is a key Combatant Command, Service and CJCS reference document on future challenges and opportunities. Support to the DoD analytical agenda consists of improving and refining the classified Integrated Security Contexts (ISCs). This dedicated analytical support ensures that the ISCs reflect a balanced and plausible set of future warfare challenges.

FY 2010 Accomplishments:

- Supporting the Chairman’s CCJO, completed the 2010 JOE White Paper Update. Produced research papers with emphasis on the future trends, conditions, challenges, and opportunities faced by future joint warfighting.
- At the request of the many of the Combatant Commands, Services, and multinational governments provided detailed “future briefs” to Government Accountability Office (GAO), combatant commanders, DOD officials, multinational partners, staff and war colleges, NDU, concept developers, Service boards, and other government agencies.
- Supported OSD by developing and refining classified ISCs and QDR wargame documents.
- Allied Command Transformation (ACT) Support: provided U.S.-perspective futures support to NATO’s ACT Multiple Futures Project (MFP) and supported the development of NATO future-related analysis, research, and strategic reports. Co-sponsored with ACT and others the “Cooperation and Conflict in the Global Commons” Conference and provided a white paper to define the problem.
- Delivered:
- 2010 Joint Operating Environment (JOE)
- Developed realistic future scenarios and vignettes in support of the older DPSs and the new ISC scenarios.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Planned, coordinated and executed a conference in coordination with Defense Intelligence Agency (DIA) and National Academies of Science focused on future Science and Technology threats. The output from this is a classified study on likely threat challenges and capabilities in S&T and associated time horizons. • Planned, coordinated and executed a conference in coordination with Allied Command Transformation, Naval Post-graduate School, and National Defense University focused on future conflict in the Global Commons. Provided a white paper to frame the nature of future problems in the Commons. • Planned, coordinated and executed a conference in coordination with Defense Intelligence Agency (DIA), Old Dominion University, and the National Defense University focused on the possible fragmentation of Russia and its implications for destabilization and conflict in Eurasia. • Published White Papers: “Future Threats to Access to the Global Commons”, “A Synthesis of Futures Scenarios and Implications for the Joint Force”, and “Rise and Fragmentation of Great Powers”. • Coordinated for an exterior Red Team to challenge the concept “Countering Irregular Threats to Air Operations”; created a plausible scenario based upon a hybrid threat in a major urban environment to assist in understanding plausible future threats and CONOPS. This effort will focus on two QDR missions (Defeat Aggression in Anti-access Environments and Succeed in COIN, Stability, and Counterterrorist Operations) and five subordinate tasks.			
FY 2011 Plans: • Support the Chairman’s CCJO review and all Combatant Command concept and doctrine development, LOEs and experimentation program through research and publishing of the 2011 JOE. Based on doctoral level SME future focused input, JFG will research, review and produce detailed research papers with emphasis on the future trends, conditions, challenges, and opportunities to be faced by future joint warfighters. Set the “context” for the future fight. • Provide detailed input to support the development of products, papers and classified studies that support the DoD Analytical Agenda as it transitions to Support to Strategic Analysis. Senior analyst will review and refine OSD’s Integrated Security Contexts (ISCs) and Foundational Activities (FA) scenarios and participation in the Support to Strategic Analysis process; provide input to the Comprehensive Joint Assessment (CJA) and other policy and strategy “future focused” documents. • Research, analyze, synthesize and promote a vision of the future that includes critical analysis of battlefield innovation of disruptive technologies through partnership with DIA, command and service intelligence, information dominance and national defense intelligence agencies. To this end, plan, coordinate, and execute international conferences focused as follows and provide DoD, JCS, Combatant Command, Service and Multinational attendee actionable white papers on: • Ideological Conflict over Global Networks “Winning the Global War of Ideas” • The Rise and Fragmentation of Great Powers: China • The Rise and Fragmentation of Great Powers: India • Specific and measurable outcomes include:			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603828D8Z: *Joint Experimentation*	PROJECT P808: *Joint Experimentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• A clear statement of the future challenges and implications for the joint force that allows concepts to be developed to prepare for these challenges. • A set of alternative futures scenarios to guide focused scenario development for joint exercises and Combatant Command and Service LOEs and experiments.			
Accomplishments/Planned Programs Subtotals	103.336	111.946	58.130

	FY 2010	FY 2011
Congressional Add: Tidewater Full Scale Exercise	2.320	-
FY 2010 Accomplishments: Funds executed by the Virginia Office of the Commonwealth Preparedness utilizing the experience and unique capabilities of the U.S. Naval Postgraduate School's Center for Asymmetric Warfare and Old Dominion University's Virginia Modeling Analysis and Simulation Center. The Tidewater Full Scale Exercise enhanced the Commonwealth of Virginia's interdiction, response, and recovery capabilities to a WMD event through the conduct of a multi-agency, maritime Full Scale Exercise.		
Congressional Adds Subtotals	2.320	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance of Joint Experimentation efforts is measured by successful development of:
(1) objective assessment and validation of enhanced capabilities enabling the joint force commander to perform joint missions.
(2) delivery of relevant, intellectually rigorous joint concepts to enhance or change Joint Doctrine.
(3) confirmed transition of capability/products from experimentation to force implementation through the DOTMLPF-P Change Recommendations (DCR) process.
(4) identification of innovative integrated solutions and joint interoperability standards for Service and Agency capability developers to pursue through demonstration, acquisition and/or employment.
(5) resolution of specific joint concept and capability shortfalls delineated through the JCD&E experimentation campaign plan development process.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603832D8Z: *DoD Modeling and Simulation Management Office*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	34.055	38.140	37.029	-	37.029	37.324	38.049	38.865	40.026	Continuing	Continuing
P476: *DoD Modeling and Simulation Management Office*	34.055	38.140	37.029	-	37.029	37.324	38.049	38.865	40.026	Continuing	Continuing

A. Mission Description and Budget Item Justification

Modeling and Simulation (M&S) is a key enabler of the Department of Defense (DoD) activities in communities enabled by M&S such as acquisition, analysis, experimentation, intelligence, planning, test & evaluation, and training. The strategic objective of the DoD Modeling and Simulation Management Office (MSMO) is to execute enterprise management of a robust, defense-wide M&S capability that enhances the value of DoD's M&S investment through funding and coordinating high-priority activities that: (1) encourage collaboration among M&S stakeholders throughout the DoD; (2) promote outreach and better understanding of defense systems, missions, and operations; (3) support efficiency, reduce duplication, and enhance reuse through improved characterization of M&S programs and resources; and (4) leverage the investment in this National Critical Technology within the DoD, as well as other governmental agencies, industry, and academia. Under the authority of DoD Directive 5134.1, Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) provides the oversight for this Modeling and Simulation Management Office PE with advice and assistance from a flag-officer level M&S Steering Committee. The PE is executed by MSMO in accordance with DoD Directive 5000.59, Management of Modeling and Simulation; DoD 4120.24-M, DoD Standardization Program (DSP) Policies and Procedures; and DoD Instruction 3200.14, Principles and Operational Parameters of the DoD Scientific and Technical Information Program.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	38.505	38.140	38.517	-	38.517
Current President's Budget	34.055	38.140	37.029	-	37.029
Total Adjustments	-4.450	-	-1.488	-	-1.488
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	0.800	-			
• SBIR/STTR Transfer	-0.956	-			
• Other Adjustments	-4.294	-	-	-	-
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.967	-	-0.967
• Defense Efficiency - Contractor Staff Support	-	-	-0.468	-	-0.468
• Economic Assumptions	-	-	-0.053	-	-0.053

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603832D8Z: *DoD Modeling and Simulation Management Office*

Change Summary Explanation

Defense Efficiency – Reports, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, strategic plans below the aggregate level reported in the previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603832D8Z: *DoD Modeling and Simulation Management Office*	PROJECT P476: *DoD Modeling and Simulation Management Office*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P476: *DoD Modeling and Simulation Management Office*	34.055	38.140	37.029	-	37.029	37.324	38.049	38.865	40.026	Continuing	Continuing

A. Mission Description and Budget Item Justification

Modeling and Simulation (M&S) is a key enabler of Department of Defense (DoD) activities in communities enabled by M&S such as acquisition, analysis, experimentation, intelligence, planning, test & evaluation, and training. The strategic objective of the DoD Modeling and Simulation Management Office (MSMO) is to execute enterprise management of a robust, defense-wide M&S capability that enhances the value of DoD's M&S investment through funding and coordinating high-priority activities that: (1) encourage collaboration among M&S stakeholders throughout the DoD; (2) promote outreach and better understanding of defense systems, missions, and operations; (3) support efficiency, reduce duplication, and enhance reuse through improved characterization of M&S programs and resources; and (4) leverage the investment in this National Critical Technology within the DoD, as well as other governmental agencies, industry, and academia. Under the authority of DoD Directive 5134.1, Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) provides the oversight for this Modeling and Simulation Management Office Program Element with advice and assistance from a flag-officer level M&S Steering Committee. The PE is executed by MSMO in accordance with DoD Directive 5000.59, Management of Modeling and Simulation; DoD 4120.24-M, DoD Standardization Program (DSP) Policies and Procedures; and DoD Instruction 3200.14, Principles and Operational Parameters of the DoD Scientific and Technical Information Program.

MSMO is responsible for facilitating and coordinating:

• Execution of DoD's Strategic vision for DoD M&S activities.

• Oversight and strategic governance of DoD's M&S capabilities and resources.

• Development and implementation of policies, plans, procedures, and DoD issuances to manage M&S, to include the M&S Corporate and Crosscutting Business Plan and business plans for the communities enabled by M&S.

• Best practices for M&S acquisition, development, management, and use by DoD Components and communities.

• Development of M&S technologies to address strategic enterprise needs.

MSMO also serves as DoD's:

• Lead Standardization Activity (LSA) for managing modeling and simulation standards and methodologies.

• Focal point for coordinating DoD M&S outreach activities and interactions within DoD, with other U.S. Government Departments and Agencies, with coalition partners including NATO and Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), International Allies, industry and academia.

MSMO objectives for enterprise best business practices include commonality, reuse, interoperability, efficiencies, and effectiveness. These objectives support the goals of DoD's M&S Strategic Vision, which are:

Goal 1. Standards, architectures, networks and environments that:

• Promote the sharing of tools, data, and information across the Enterprise

• Foster common formats

• Are readily accessible and can be reliably applied by users

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603832D8Z: *DoD Modeling and Simulation Management Office*	**PROJECT** P476: *DoD Modeling and Simulation Management Office*

Goal 2. Policies at the enterprise level that:
- Promote interoperability and the use of common M&S capabilities
- Minimize duplication and encourage reuse of M&S capabilities
- Encourage research and development to respond to emerging challenges
- Limit the use of models and data encumbered by proprietary restrictions
- Leverage M&S capabilities across DoD, other government agencies, International partners, industry, and academia

Goal 3. Management processes for models, simulations, and data that:
- Enable M&S users and developers to easily discover and share M&S capabilities and provide incentives for their use
- Facilitate the cost-effective and efficient development and use of M&S systems and capabilities
- Include practical validation, verification, and accreditation guidelines that vary by application area

Goal 4. Tools in the form of models, simulations, and authoritative data that:
- Support the full range of DoD interests
- Provide timely and credible results
- Make capabilities, limitations, and assumptions easily visible
- Are useable across communities

Goal 5. People that:
- Are well-trained
- Employ existing models, simulation, and data to support departmental objectives
- Advance M&S to support emerging departmental challenges

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: DoD Modeling and Simulation Management Office	34.055	38.140	37.029
FY 2010 Accomplishments: Accomplishments for FY 2010 included the continued coordination, development and dissemination of tools for the Department's chief priority, such as irregular warfare; managed the DoD #1 M&S priority – standards; developed distributed simulation architectures; evolved towards a net-centric architecture; implemented new Verification, Validation and Accreditation (VV&A) technologies and processes; continued as lead standardization activity (LSA) for managing M&S standards and methodologies; and served as Focal point for coordinating DoD M&S outreach activities and interactions within DoD, with other U.S. Government Departments and Agencies, with coalition partners including NATO and Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), international Allies, industry and academia. Results of these efforts for 2010 include: • Identified and categorized over 50 separate authoritative data sources			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603832D8Z: *DoD Modeling and Simulation Management Office*	PROJECT P476: *DoD Modeling and Simulation Management Office*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Evolved standards that provided cost effective and efficient environmental data, interoperability and discovery of M&S resources • Finalized the next version of High Level Architecture (HLA) standard capabilities • Prototyped an "Architecture Neutral Data Exchange Model" to measurably reduce the time needed to prepare for a Live, Virtual, Constructive simulation event • Identified industry information technologies applicable to the DoD M&S environment • Developed 16 M&S academic courses and 11 continuous learning modules for the workforce • Developed vital M&S Irregular Warfare methodologies • Transitioned environmental representation tools to 13 programs of record • Integrated 4 repositories • Completed 7 standards with 3 standards awaiting processing. Developed, produced, and applied enterprise-wide planning and best business practices, which encouraged commonality, reuse, interoperability, efficiencies, effectiveness and cost savings across Services, Combatant Commands, and OSD-level activities. These efforts were essential to informing choices for Joint solutions and provided improved enterprise efficiency, effectiveness, and return on investment (RoI) for M&S.			
FY 2011 Plans: DoD M&S management will continue implementing the "Strategic Vision for DoD Modeling and Simulation" and its objectives of commonality, reuse, interoperability, efficiencies, and effectiveness for enhancing M&S support to the warfighter. Specific tasks for FY 2011 include: Management / Coordination Activities: • Revise and continue the implementation of metrics for measuring program performance • Revise seven Community M&S business plans • Complete an M&S industrial base study • Complete a NATO Technical Panel-2 (M&S) report • Continue involvement with the M&S Congressional Caucus • Continue coordination with the Simulation Interoperability Standards Organization (SISO) and the Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC) • Continue as Lead Standardization Activity (LSA) for managing M&S standards and methodologies • Continue serving as focal point for coordinating DoD M&S outreach activities and collaboration with non-DoD M&S agencies including NATO and Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), and other Allies. Sustainment Activities: • Accelerate standardization and commonality of data, tools, and services across the M&S enterprise • Refine and leverage a core set of tools to make authoritative data widely accessible and useable			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603832D8Z: *DoD Modeling and Simulation Management Office*	PROJECT P476: *DoD Modeling and Simulation Management Office*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Continue managing M&S standards • Improve the HLA compliance testing tools Development Activities: • Enhance analytical capabilities and continue coordinating the development and dissemination of M&S tools for irregular warfare • Plan for the integration of disparate M&S architectures • Enhance the Environmental Data Cube Support System (EDCSS) • Develop risk-based VV&A recommended practices • Deploy the M&S Catalog and Modeling & Simulations Information System. • Refine the M&S workforce requirements These planned tasks will continue developing, producing, and applying enterprise-wide planning and best business practices to encourage commonality, interoperability, reuse, and cost savings across the Services, Combatant Commands, and OSD-level activities.			
FY 2012 Plans: DoD M&S management will continue implementing the "Strategic Vision for DoD Modeling and Simulation" and its focus areas of standards, interoperability, and visibility. Objectives will include continuing to develop data standards and common architectures; creating repositories and registries supporting reuse for information, data, and models; reducing use of proprietary tools (consistent with the FAR); developing tools to model non-traditional warfare areas such as irregular warfare; and identifying and removing barriers to collaboration with industry, academia, and interagency partners, and others outside the DoD M&S enterprise; and educating the workforce for leveraging modeling and simulation. Specific tasks planned for FY 2012 include: Management / Coordination Activities: • Revise the Corporate and Crosscutting M&S Business Plan • Revise the metrics for measuring program performance • Support responses to Congressional taskings • Continue serving as Lead Standardization Activity (LSA) for managing M&S standards and methodologies • Continue serving as focal point for coordinating DoD M&S outreach activities and collaboration with non-DoD M&S agencies including NATO and Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), and other Allies. Sustainment Activities: • Continue managing M&S standards • Accelerate standardization and commonality of data, tools, and services across the M&S enterprise • Continue applying a core set of tools to make authoritative data widely accessible and useable • Manage the M&S Catalog and Modeling & Simulations Information System			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603832D8Z: *DoD Modeling and Simulation Management Office*	PROJECT P476: *DoD Modeling and Simulation Management Office*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Development Activities: • Begin integration of disparate M&S architectures • Update requirements for the M&S workforce • Monitor and continue coordinating the development and dissemination of M&S tools for irregular warfare • Deploy the Environmental Data Cube Support System (EDCSS) • Apply risk-based VV&A recommended practices • Improve and apply HLA compliance testing tools • Update M&S education courses These planned tasks will continue developing, producing, and applying enterprise-wide planning and best business practices to encourage commonality, interoperability, reuse, and cost savings across the Services, Combatant Commands, and OSD-level activities.			
Accomplishments/Planned Programs Subtotals	34.055	38.140	37.029

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Comment: Performance in this program is monitored in the following ways:

1. Number of instances where M&S standards, best practices, or tools have been adopted or employed. (Goal 1)
2. Number of M&S standards registered with the Defense Standardization Program. (Goal 1)
3. Number of collaborative events held or agreements made within DoD, with other U.S. Government Departments and Agencies, coalition partners including NATO and Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), international Allies, industry and academia. (Goal 2)
4. Number of M&S policies or plans issued, re-issued, revised, or deleted. (Goal 2)
5. Number of M&S gaps identified in the Corporate and Crosscutting Business Plan and addressed by PE funding. (Goal 3)
6. Number of M&S resources (tools, data, and services) made visible for reuse. (Goal 4)
7. Number of curricula developed that are available for educating the M&S workforce. (Goal 5)

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	93.303	97.642	99.593	-	99.593	102.218	103.732	105.368	108.368	Continuing	Continuing
1: *Advanced Propulsion Test Technology*	19.372	24.159	20.783	-	20.783	19.363	28.038	14.759	15.377	Continuing	Continuing
2: *Spectrum Efficient Technology*	7.805	7.860	9.505	-	9.505	10.046	12.450	16.927	17.552	Continuing	Continuing
3: *Multi-Spectral Test*	19.617	19.688	18.263	-	18.263	15.206	12.396	10.775	13.201	Continuing	Continuing
4: *Advanced Instrumentation Systems Technology*	5.707	7.928	9.377	-	9.377	9.304	11.708	16.017	16.654	Continuing	Continuing
5: *Directed Energy Test*	20.826	19.965	10.899	-	10.899	10.985	10.200	15.186	13.906	Continuing	Continuing
6: *Netcentric Systems Test*	10.893	14.384	19.092	-	19.092	21.508	13.697	12.638	15.056	Continuing	Continuing
7: *Unmanned and Autonomous System Test*	2.583	3.658	6.724	-	6.724	10.250	9.561	11.973	9.695	Continuing	Continuing
8: *Common Range Integrated Instrumentation System*	6.500	-	-	-	-	-	-	-	-	Continuing	Continuing
9: *Multi-Level Security for T&E*	-	-	4.950	-	4.950	5.556	5.682	7.093	6.927	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Test and Evaluation/Science and Technology (T&E/S&T) program seeks out and develops test technologies to pace evolving weapons technologies. This program is critical to ensuring that the Department of Defense (DoD) has the ability to adequately test the advanced systems that will be fielded in the future. To meet this objective, the T&E/S&T program performs the following activities:

- Exploits new technologies and processes to meet important test and evaluation (T&E) requirements
- Expedites the transition of new technologies from the laboratory environment to the T&E community
- Leverages industry advances in equipment, modeling and simulation, and networking to support T&E

Additionally, the T&E/S&T program examines emerging T&E requirements resulting from Joint Service initiatives to identify T&E technology needs and to develop a long-range roadmap for technology insertion. The program leverages and employs applicable 6.2 applied research from the highly developed technology base in DoD laboratories and test centers, other government agencies, industry, and academia to accelerate the development of new test capabilities. This program element also provides travel funds for T&E/S&T program oversight, special studies, analyses, and strategic planning related to test capabilities and infrastructure.

The T&E/S&T program is funded within the Advanced Technology Development Budget Activity because it develops and demonstrates high payoff technologies for current and future DoD test capabilities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603941D8Z: *Test and Evaluation/Science and Technology*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	94.960	97.642	99.729	-	99.729
Current President's Budget	93.303	97.642	99.593	-	99.593
Total Adjustments	-1.657	-	-0.136	-	-0.136
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.513	-			
• Program Adjustments	-0.144	-	-	-	-
• Economic Asssumption Reductions	-	-	-0.136	-	-0.136

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 1: *Advanced Propulsion Test Technology*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
1: *Advanced Propulsion Test Technology*	19.372	24.159	20.783	-	20.783	19.363	28.038	14.759	15.377	Continuing	Continuing

A. Mission Description and Budget Item Justification

High speed and hypersonic weapons are being developed to ensure the continued military air superiority and strike capability of the United States. Current weapon system demonstrations and technology development programs include high speed and hypersonic air breathing missiles, maneuvering reentry and boost/glide weapons, hypersonic gun-launched projectiles, air breathing space access vehicles, and high speed torpedoes. These systems require development of high speed turbine, ramjet, scramjet, and combined cycle engines; high temperature materials; thermal protection systems; and thermal management systems.

The Advanced Propulsion Test Technology (APTT) area develops technologies to enable robust, accurate, and timely Test and Evaluation (T&E) of these future weapon systems. DoD acquisition regulations require weapon systems to undergo a thorough T&E process in order to provide early detection of deficiencies and ensure system suitability and survivability. However, these weapons' extreme operational environments preclude accurate determination of their performance with today's T&E assets. Current national test capabilities have deficiencies in data accuracy, flight condition duplication and simulation, test methods, materials productivity, modeling and simulation (M&S) fidelity, and range safety. The APTT area is developing advanced T&E technologies in the areas of ground test, flight test, M&S, and instrumentation to fulfill T&E requirements. The APTT mission is to provide T&E technologies that will enable high speed and hypersonic weapon systems to be developed with the same accuracy and robustness as current lower speed systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Advanced Propulsion Test Technology	19.372	24.159	20.783
FY 2010 Accomplishments: FY 2010 was a year of considerable accomplishments including unprecedented advances in ground test technologies for air breathing propulsion and boost/glide weapons, development of new flight test capabilities, demonstration of new non-intrusive instrumentation for ground and flight test, and deployment of new modeling and simulation tools. Tests of a scramjet engine in a specially designed ground test facility allowed, for the first time, determination of the effects of using vitiated air on the performance of a hydrocarbon fueled scramjet engine. Current ground test facilities can only create the high temperature inlet conditions necessary for scramjet engine tests by burning fuel in the inlet flow. The resulting "vitiated air" (air contaminated with the products of combustion) has different gas properties than clean air which significantly affects the engine's performance and introduces errors into test data. Results from these important tests with both clean and vitiated air will improve the analysis of results from existing vitiated T&E facilities, help explain flight test results, improve M&S and guide investments in future T&E capabilities. Testing was also conducted to quantify the differences between impulse and blowdown aeropropulsion facilities, and to evaluate subscale verses full scale missile inlet test methods. These tests provide important new information to guide future weapon system T&E plans.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 1: *Advanced Propulsion Test Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
In addition to vitiation effects, current hypersonic aeropropulsion facilities introduce high uncertainties in engine performance test results due to the limitation of operating at fixed Mach numbers instead of accelerating through variable Mach numbers in an operationally realistic manner (operability). Programmatic risks associated with fielding a hypersonic airbreathing missile can be greatly reduced by developing clean air heat addition and variable Mach number technologies. Several efforts to develop components for a next-generation hypersonic aeropropulsion test capability were completed this year while others continued to progress. Advances include: development of refractory materials and designs for a Mach 8, clean air storage heater; tests of two variable Mach number nozzle concepts; advanced materials and cooling schemes for nozzle throats; advanced high pressure/temperature facility components; and a modular fuel cracking system. Based on the success of these efforts, a new effort was initiated in FY10 to integrate these technologies into a small scale, clean air, variable Mach number, aeropropulsion test capability. Integrating these technologies into an operational facility will complete their development to Technology Readiness Level (TRL) 6, provide an on-going test asset to the DoD, and provide risk reduction for construction of a full scale facility. Key to the development of a clean air heater was development and initial testing of yttria-stabilized-zirconia bricks as the primary building block of future clean air heaters. Test results indicated the bricks can be heated to temperatures nearly 2,000 degrees hotter than molten steel and withstand the stresses of repeated dramatic rapid temperature changes without the degradation observed in earlier clean air heaters. Understanding ablation characteristics of thermal protection systems is critical for maneuvering reentry and boost/glide vehicles. Progress was made this year on increasing arc jet facilities' maximum enthalpy (available energy to simulate flight conditions) and run time, allowing for more realistic tests of leading edge materials. Additionally, a new test technique was pioneered utilizing low temperature ablators in existing wind tunnels which do not achieve true reentry temperatures to determine the affect of ablation on vehicles' stability and control and to provide data for validating ablation computer models. Advances in flight test technologies included progress towards an autonomous flight termination system and development of advanced flight maneuvers. The autonomous flight termination effort, designed to assure destruction of an errant hypersonic vehicle leaving its designated safety corridor, completed its design phase and is proceeding to fabrication of a brass board system. New instrumentation efforts initiated in FY10 included: the successful demonstrations in ground and flight tests of a new laser based non-intrusive flow measurement system that will use the mid-Infrared spectrum to greatly reduce uncertainties; a miniaturized, cooled wind tunnel balance specifically addressing a T&E gap in supersonic store separation capabilities; and development of a new miniature and robust fiber optic heat flux gauge was also completed and readied for ground test in early FY 2011.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 1: *Advanced Propulsion Test Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

Investment in a state-of-the-art validated computational fluid dynamics (CFD) tool resulted in the ability to simulate the very complex flows within scramjet engines. Physical modeling for turbulence, fuel-air combustion, and heat transfer were added and validated with test data.

FY 2011 Plans:

FY 2011 will see continued efforts to improve hypersonic ground test to levels required for acquisition programs, demonstration of new flight test techniques, improvements in instrumentation, and continued validation/improvement of CFD codes.

Ground tests in direct connect and freejet test modes will be conducted to continue to quantify vitiation and test method effects on scramjet engine performance and operability. These tests will also provide a basis for identifying optimal test methods for larger, next generation scramjet engines. In addition, a methodology for truncating large 3-D inlets to fit within existing facilities and still provide accurate full scale inlet results will be tested.

The Phase I work on the facility to integrate advance ground test component technologies will continue towards an initial testing capability with a goal of Mach 8 with fixed Mach number nozzles. The primary thrust in FY 2011 will be construction of the yttria-stabilized-zirconia storage heater and attendant modifications to a demonstration test facility. Design work for subsequent phases will be geared towards providing variable flight conditions.

Improved electrodes will be demonstrated in an arc jet facility enabling greatly improved T&E of maneuvering reentry and boost/glide vehicles. These systems will also benefit from continued development of test techniques involving low temperature ablators.

A system to enable propulsion testing beyond Mach 8 using magnetohydrodynamics to accelerate flow ionized by electron beams will also be demonstrated.

A first generation, autonomous flight termination system will be built and undergo hardware-in-the-loop testing. Results from these tests will be incorporated into a flight rated, second generation design.

Development of an improved laser based non-intrusive flow measurement system will continue as will construction of a miniaturized, cooled wind tunnel balance for supersonic store separation. Both instruments will be demonstrated in relevant environments.

Validation and improvement of the CFD code will continue, making use of the unique datasets obtained from the scramjet engines tests mentioned above.

FY 2012 Plans:

Continuing efforts in FY 2012 will be centered on completion of the integration facility to demonstrate clean air aeropropulsion testing up to Mach 8. Technology development will continue with construction of hardware which will enable variable pressure, temperature and enthalpy with fixed nozzles. Testing for vitiation, test methodology and scale effects will conclude and will cumulatively provide the most extensive examination of hypersonic aeropropulsion methods yet accomplished and will enable significant improvements in the quality of data provided to weapon system developers. Work on a new mid-IR non-intrusive flow measurement and a miniaturized, cooled wind tunnel balance will conclude in FY 2012. New test technology efforts will be

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 1: *Advanced Propulsion Test Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
initiated addressing: test technologies, techniques, and methodologies to determine full-scale propulsion system performance and operability from subscale tests; technology for continuous flow, clean air heat addition up to Mach 6 to enable full-scale, combined cycle, propulsion system test; further development of M&S codes for accurate prediction of flow fields, boundary layer transition, and heat transfer in high speed flow; test technologies and methodologies to support long run time, clean air, true temperature testing; and test technology in support of advanced rail guns.			
Accomplishments/Planned Programs Subtotals	19.372	24.159	20.783

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 2: *Spectrum Efficient Technology*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2: *Spectrum Efficient Technology*	7.805	7.860	9.505	-	9.505	10.046	12.450	16.927	17.552	Continuing	Continuing

A. Mission Description and Budget Item Justification

Weapon systems have experienced a significant increase in complexity over the past fifty years, in which an extraordinary amount of data is passed among these systems, and between the systems and our test infrastructure. Accordingly, a vast amount of data must be collected, transmitted, and analyzed, which in turn requires a large amount of spectrum resources. However, the amount of radio frequency (RF) spectrum designated to support test and evaluation (T&E) is decreasing, most notably due to re-allocations for commercial use. This combination of decreasing RF spectrum with increasing data requirements results in an urgent need to create test technologies that maximize the use of spectrum resources for DoD T&E operations.

The L and S frequency bands constitute the traditional spectrum allotted for military use. The explosive need for spectrum in the commercial sector has resulted in portions of these bands being reallocated to industry. To compensate for this, DoD has been authorized to use the C-Band spectrum. C-Band offers numerous benefits to DoD, including a three-fold increase in available bandwidth, but it comes with a number of technical challenges. Most notably, our test infrastructure for telemetry is not designed to accommodate C-Band. Technologies are required to implement innovative techniques that efficiently extend our use of C-Band without a major overhaul to our national test infrastructure. As a case in point, commercial telemetry transmitters operating in C-Band exist; however, they do not have the form factor (size and weight) or the packaging (i.e. not ruggedized) to survive airborne test applications.

Traditional telemetry applications employ streaming telemetry in which data is moved one-way from the instrumented System Under Test to our test infrastructure. Modern network based telemetry capabilities, such as those being developed by the Central Test and Evaluation Investment Program (CTEIP), enable much more robust and efficient bidirectional transfer of data. DoD's strategy is to create technologies for streaming telemetry capability in C-Band, thereby opening up the legacy L and S-Bands for networked telemetry usage.

The Spectrum Efficient Technology (SET) area is pursuing T&E technologies that enable more efficient use of legacy telemetry bands and expansion into non-traditional areas of the RF and optical spectra. These technology advancements will address both the growing data requirements of warfighting systems and the limited availability of spectrum to support T&E. The SET area is structured to develop technologies required for a networked telemetry system, improve efficiency of streaming telemetry hardware, and pursue technologies required to utilize the C-Band spectrum. Several technology advancements supporting the development of networked telemetry systems serve as risk reduction efforts for CTEIP.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Spectrum Efficient Technology	7.805	7.860	9.505
FY 2010 Accomplishments: To keep pace with increasing data requirements, SET pursued efforts and technologies to increase the efficiency of streaming telemetry systems, enable networked telemetry, and expand telemetry operations into the recently acquired C-Band spectrum. In order to achieve more efficient streaming telemetry hardware, it is necessary to develop methods to mitigate and reduce errors in the data link, advanced waveforms, and data coding techniques. SET developed methods to mitigate the effects of multipath and forward error correction techniques to reduce errors in the streaming telemetry link. The forward error correction			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 2: *Spectrum Efficient Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
schemes transitioned to the Range Commanders Council Telemetry Group for inclusion into the Inter-Range Instrumentation Group telemetry standards. The research and development of a Continuous Phase Modulation-Orthogonal Frequency Division Multiplexing (CPM-OFDM) waveform, capable of supporting simultaneous high data rate test assets within a limited amount of RF spectrum, was initiated to improve spectrum utilization and efficiency. The SET area emphasized developing the technologies to enable the development a networked telemetry system. SET further matured technologies to optimize and manage the telemetry network by continuing the development of policy-based network management tools and initiating efforts to develop spectrum and network management systems. These efforts seek to increase network throughput, spectrum utilization, and overall telemetry network performance. Technologies to enable the dynamic reconfiguration of the test data parameters transmitted over the telemetry network were further matured and provided risk reduction in support of CTEIP development. The ability to reconfigure the data link improves efficiency by allowing the transmission of desired test data only. SET also continued development of technologies to support networked telemetry requirements in other environments, such as those for ground based unmanned autonomous systems testing. In order to support the expansion of telemetry operations into non-traditional areas of the RF spectrum, SET pursued efforts to analyze the T&E spectrum in the C-Band. This resulted in representative RF channel models, which are necessary to facilitate the development of telemetry hardware. SET initiated the development of a wideband power amplifier to increase the efficiency of the amplifier over a wide range of frequencies, specifically the traditional T&E spectrum and the C-Band. The RF C-Band channel models were transitioned to open air ranges to support C-Band telemetry development. ***FY 2011 Plans:*** SET will continue the emphasis on developing technologies to meet networked telemetry requirements and perform risk reduction for CTEIP. Technology enabling the dynamic reconfiguration of transmitted test data over the network will be transitioned to an initial operational capability. Policy-based management tools to optimize data throughput and increase spectrum utilization will be matured. Spectrum and network management technology will continue, with a focus on capabilities that allow for dynamic distribution of spectrum resources amongst test participants. The spectrum and network management technologies matured by SET will support CTEIP developments. Advanced waveform technologies will be developed to increase data throughput. A networked telemetry transceiver using the OFDM waveform will be developed and tested as a risk reduction effort for iNET, the CTEIP project developing advanced network telemetry capability. Efforts to develop networked data recorders will also be initiated. SET will develop technologies required to expand telemetry operations into non-traditional spectrum bands. The development of a wideband power amplifier that is capable of efficiently operating within the traditional and C-Band spectra will be matured further to increase spectrum utilization and support the development of a robust C-Band telemetry capability. Additionally, SET will initiate efforts to research and develop phased array antenna technology (both ground and airborne) that will enable flexible			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 2: *Spectrum Efficient Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
scheduling of the T&E spectrum by incorporating both the traditional and C-Band frequencies. These technologies will reduce the technical risk associated with beam steering in the C-Band frequencies while reducing the amount of infrastructure modifications needed to implement a C-Band telemetry capability. ***FY 2012 Plans:*** SET will further advance the development of technologies required for network telemetry. Efforts to develop policy-based network management tools will be completed, demonstrated, and transitioned to support CTEIP developments. Spectrum and network management systems, including a suite of network protocols, will be demonstrated and transitioned to CTEIP as well. Technologies to develop advanced waveforms designed to increase data throughput will be matured. The development of advanced waveforms will enable the telemetry network to support multiple high data rate test assets and will increase efficiency and spectrum utilization. Support of CTEIP risk reduction to develop networked data recorders will continue and the technology will be matured. Emphasis will be placed on the development and maturation of technologies required to expand telemetry operations in other frequency ranges, as well. The effort to develop a wideband linear power amplifier will be completed. This technology will be demonstrated and transitioned to open air ranges. Phased array antenna technology utilizing both the traditional and C-Band frequencies will continue to be matured to enable flexible spectrum scheduling and alleviate technical risk associated with tracking and beam steering in the C-Band. Efforts to develop an airborne multiband transceiver will be initiated to support networked telemetry, increase spectrum scheduling, and support two-way data transmission of the telemetry network.			
Accomplishments/Planned Programs Subtotals	7.805	7.860	9.505

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 3: *Multi-Spectral Test*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3: *Multi-Spectral Test*	19.617	19.688	18.263	-	18.263	15.206	12.396	10.775	13.201	Continuing	Continuing

A. Mission Description and Budget Item Justification

Easy to use and readily available, man-portable air defense systems (MANPADS) pose an imminent and acute threat to military aircraft and civilian airliners. Our ability to counter such threats is essential to achieve the military objective of owning the airspace in theater and safely operating commercial air traffic within the National Airspace. Therefore, the ability to test Missile Warning Systems, Hostile Fire Indicators, Infrared Countermeasures and advanced sensors is critical to our national defense. Additionally, a new generation of missile seekers is in development and requires a new generation of test technologies for effective assessment. The Multi-Spectral Test (MST) technology area develops technology in three major domains related to testing seekers and sensors: prediction, measurement, and stimulation. Prediction entails the accurate emulation of a sensor or a seeker in a simulation. Measurement deals with all interactions between an object of interest (e.g., a threat) and its immediate environment (e.g., sun glint, moisture in the air, and exhaust). Stimulation involves “painting” a test pattern, an image, or a changing scene on a system under test (SUT). Stimulation can be as simple as testing to see if an SUT responds to a stimulus (e.g., an image) or as complex as simulating battle scene events to measure the response of an SUT in a more relevant scenario. Stimulations and simulations are used at open air ranges (OAR), in installed system test facilities (ISTF), and in hardware-in-the-loop (HWIL) test beds.

The test and evaluation (T&E) community is required to test advanced seekers and sensors in a repeatable, objective fashion with validated ground-truth data before and after seeker/sensor integration into warfighting systems. Without new technologies, DoD will be unable to perform adequate T&E of multi-spectral and hyperspectral weapon systems of the future. MST is working to address all electro-magnetic bandwidth requirements of concern to the major test ranges and facilities. This includes advancing technologies to test polarization, radio frequency through ultra-violet bands, radar, laser radar (LADAR), and seismic systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Multi-Spectral Test	19.617	19.688	18.263
FY 2010 Accomplishments: MST initiated several projects in FY 2010 to develop technology to test seekers and sensors, to perform risk reduction/mitigation for the Central Test and Evaluation Investment Program (CTEIP), and to support the Infrared Countermeasures (IRCM) Test Resource Requirements Study. These MST projects include development of a high-temperature scene emitter, which enables enhanced environmental measurement and generation of battle scenes. MST developed sub-array light emitting diode technology, including an ultra-violet open air range array that tests missile warning systems (MWS) and transitioned this technology to support the test community. The sub-array light emitting diode technology developed under MST extends the range that MANPADS engagements can be tested. MST emitters and projector technology initiatives, which include designs for testing at an ISTF, HWIL, and OAR, are progressing very well. The Superlattice Light Emitting Diode initiative is approaching the final stages of testing prior to integration into a MWS test suite. Technologies are being pursued to address challenges in hostile fire indication, which include a Micro-Plasma Emitter project.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 3: *Multi-Spectral Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
MST has made significant progress with the Read-In Integrated Circuit technology, which supplies electrical energy to emitters that feed images in ISTF and HWIL facilities. This technology is preparing for final testing before transition. The circuit will enable sensor testing at frame rate speeds and sufficient power to give our warfighters a technological edge on the battlefield for years to come. This technology will support multiple DoD test ranges and several emitter arrays under development in the MST portfolio. ***FY 2011 Plans:*** Two of the current efforts in MST's portfolio – Superlattice Light Emitting Diodes and Multispectral Polarized Scene Projector – are scheduled to complete in FY 2011. The former is developing a mid-wave/long-wave infrared high temperature, high frame rate emitter, and the latter is developing a short-wave infrared projector to test polarized sensors that detect man-made objects. Risk reduction activities for CTEIP in testing MWS in integrated ISTF and HWIL will continue. MST will invest in technologies designed to attain the goal of real-time scene generation. Investments will also be placed to address technology gaps identified in the IRCM Test Resource Requirements Study. Technologies will be pursued to stimulate synthetic aperture radars with radio frequency "imagery" and research will be conducted for wide area emitters. Moreover, MST will pursue the development of clutter models and the capability to project clutter onto a synthetic aperture radar. ***FY 2012 Plans:*** To address the testing of systems operating in the mid-wave infrared bandwidth, MST will develop technologies to enable the full testing of mid-wave infrared sensor/seekers by adding clutter models and scene generators to real-time stimulation. In addition, test technologies for testing MWS in integrated ISTF and HWIL will be transitioned to CTEIP.			
Accomplishments/Planned Programs Subtotals	19.617	19.688	18.263

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 4: *Advanced Instrumentation Systems Technology*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
4: *Advanced Instrumentation Systems Technology*	5.707	7.928	9.377	-	9.377	9.304	11.708	16.017	16.654	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Advanced Instrumentation Systems Technology (AIST) Area addresses the test and evaluation needs and technology gaps involved in instrumenting next generation warfighting systems and the complex environments in which they operate. Instrumentation requirements for systems under test are increasing exponentially for new weapons systems. On-board and personnel-borne instrumentation are required for sensing and collecting critical performance data; determining accurate time, space, position, and attitude information; interfacing with command and control data links; monitoring and reporting system-wide communications; reporting human operator performance; and storing and transmitting data. The AIST area addresses requirements driven by the need to enable technologies for miniaturized, non-intrusive instrumentation suites with increased survivability in harsh environments. Minimal space is available to add instrumentation to new or existing weapon systems subsequent to their development; moreover, additional weight and power draw can adversely affect weapon system signature and performance. Instrumentation for humans-in-the-loop, such as dismounted soldiers, should neither adversely affect soldier performance nor create operational burden. New technologies can be exploited to integrate small, non-intrusive instrumentation into new platforms during design and development, and, in some cases, into existing platforms. This class of instrumentation can provide the data required for continuous assessment throughout a system's lifecycle and can enable the collection of critical system performance data during test, training, and combat missions, thereby enabling an ongoing feedback loop between the developer, test personnel, and operator.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Advanced Instrumentation Systems Technology	5.707	7.928	9.377
FY 2010 Accomplishments: The Warfighter has a need to conduct military operations in urban environments. Consequently, a major thrust for FY 2010 included the development of test technologies to support collection of time, space, position information (TSPI) data for soldier systems (manned or unmanned), particularly in GPS-denied or degraded environments such as urban areas and tunnels. Additionally, TSPI data is needed in other environments (e.g., underwater) and for high speed/acceleration systems under test where GPS can be denied or degraded. A high accuracy chip scale atomic clock (initially developed by the Defense Advanced Research Projects Agency) was matured and integrated with acoustic modems to be positioned on the seafloor for accurate TSPI measurement on submarine and torpedo systems under test. Software modifications were made to an airborne GPS sensor unit to reject multipath signals and software changes were validated through simulation, ground testing, and flight testing. This technology directly supported risk reduction for the Central Test and Evaluation Investment Program (CTEIP) Joint Advanced Missile Instrumentation system. Other major development areas in FY 2010 included the development of advanced sensor instrumentation technologies (non-intrusive, miniature, and hardened for harsh environments) and advanced data acquisition. Four probes were developed			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 4: *Advanced Instrumentation Systems Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
to measure gas species, temperature, pressure, and Mach/flow angularity in gas turbine engines. An additional probe was developed for simultaneous analysis of turbine engine exhaust products (i.e., carbon, nitrogen, water vapor, and hydrocarbons). An open, modular, scalable, embedded systems architecture was developed to support data acquisition for system-of-systems testing. In addition, based on the revised AIST roadmap, three new efforts were initiated in FY 2010, and technology investments are being applied to develop a fiber-optic instrumentation test suite to support an electromagnetic rail gun weapon system. Warfighting systems and forces are increasingly being asked to operate in environments that have previously been inaccessible (e.g. tunnels, caves, etc.) or outside of historical mission areas (e.g. urban environment), which poses significant challenges in tracking systems under test. An additional thrust for FY2010 involves the need to test systems that operate in a GPS-denied environment. One technology involves networking GPS enabled systems within the test environment, and using the network to integrate GPS and other positional information across the connected nodes by sharing raw observables from GPS and inter-node ranges to locate each network node with high reliability. A second technological approach employs a layered system of navigation sensors leveraging collaborative navigation, existing RF ranging technology, and a Doppler velocimeter to achieve more precise positional information.			
FY 2011 Plans: Numerous systems now being brought to theater by rapid acquisitions, involve operations in extreme conditions, over long distances, for long durations, and often with very small physical footprints (i.e. micro-systems). Furnishing adequate energy and power to instrument such systems for testing is a significant technological challenge. Major thrusts for FY 2011 include continuing the FY 2010 efforts in advanced sensors, TSPI instrumentation, and advanced data acquisition/transformation, along with the development of advanced power sources for test instrumentation. AIST will complete technology development of an agile wide-area radio frequency location scheme for soldier positioning, a wide-band positioning system to locate soldiers and unmanned ground vehicles in GPS-denied or impaired areas (e.g., inside buildings and complex structures in an urban environment), and new GPS receivers with high-dynamic, multi-frequency, anti-jamming capability to provide TSPI in GPS-denied environments. These technologies will support range safety, system analysis, mission optimization, and end game scoring of highly dynamic objects.			
FY 2012 Plans: In FY 2012, AIST will complete or continue efforts initiated in prior fiscal years. New efforts will be initiated focusing on developing advanced TSPI technologies for non-intrusive applications, using wireless systems and optical, infrared, and/or acoustic techniques. TSPI technologies will be developed to support data collection in GPS denied environments, position data collection for projectiles, data collection for high dynamic systems, TSPI technologies uniquely suited to swimmers and divers, and TSPI data collection for non-cooperative undersea weapon systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 4: *Advanced Instrumentation Systems Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Advanced sensor development initiatives for non-intrusive applications will include multimodal transducers, self-registering sensors, and sensor attachment technologies. Sensing applications include body armor blunt trauma evaluation, warfighter body posture and orientation, weapon system orientation, angle of incidence/stores separation, and station keeping buoys. Advanced power/energy initiatives will develop technologies for non-intrusive application, particularly energy harvesting devices and load management devices. This includes electromechanical fuels cells and support for personnel-borne instrumentation. Advanced data transformation initiatives will develop technologies for adaptive computing, self-configuration, and self-calibration of instrumentation. Additional goals includevirtual/synthetic instrumentation measurements, self-configuration data reduction, data compression, and on-board data transport and storage.			
Accomplishments/Planned Programs Subtotals	5.707	7.928	9.377

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 5: *Directed Energy Test*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
5: *Directed Energy Test*	20.826	19.965	10.899	-	10.899	10.985	10.200	15.186	13.906	Continuing	Continuing

A. Mission Description and Budget Item Justification

Directed energy weapon technologies are transitioning rapidly into acquisition programs and Joint Concept Technology Demonstrations. DoD is exploring the military utility and suitability of these weapons. A robust capability to assess directed energy weapons is essential to understand how and when to best employ directed energy in warfighting applications, including the operational capability to utilize directed energy systems to perform counter improvised explosive device (C-IED) operations. Such assessments will depend upon knowledge acquired through the test and evaluation (T&E) of these technologies and testing of operational concepts. Associated weapon technologies, primarily consisting of High Energy Lasers (HEL) and High Power Microwaves (HPM), are outpacing supporting test technologies. HEL and HPM advancements have created a new class of weapon systems in which energy is placed on a target instantaneously. Traditional test techniques for evaluating conventional munitions (with flight times ranging from seconds to minutes) are not sufficient for the T&E of these types of systems. Consequently, new technology solutions are needed to ensure that adequate developmental, live fire, and operational test capabilities are available when directed energy programs are ready to test. DoD directed energy system and component testing requires three principal assessments: (1) energy or power on target; (2) the effects on the target; and (3) the propagation of the directed energy to the target through the atmosphere. In addition, the vulnerability of DoD systems to HPM and HEL threats needs to be characterized in accordance with MIL-STD-464B. Current test capabilities do not provide the detailed data required to understand directed energy system performance and effects. The T&E/S&T Directed Energy Test technology area is developing the technologies necessary for quantitative assessment of HEL and HPM performance, as well as the vulnerability of DoD weapons system to directed energy threats.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Directed Energy Test	20.826	19.965	10.899
FY 2010 Accomplishments: The investments in HEL energy on target test technologies yielded a number of successful technology transitions in FY2010 including a prototype ground-based HEL diagnostics sensor to measure HEL engagements, an adaptive optics system to improve image quality that compensates for atmospheric distortions, and a hyper spectral imager to characterize multiple laser wavelengths during a HEL engagement. Each of these technologies has been integrated onto a pointing system at an open air range used for tracking HEL engagements. Investments were initiated to migrate from off-board HEL measurement systems to on-board target board sensors that more directly measure the energy on target. In the area of HEL effects on target, an HEL measurement system enabling measurement of laser power during a high energy laser lethality test was transitioned. Efforts to measure temperature of an HEL target and technology investments in temperature modeling progressed, showing great promise for successful implementation. Additionally, technologies to support lethality measurements of solid state lasers were initiated. In the area of HEL atmospheric characterization, a system to measure optical turbulence and atmospheric transmission over long paths in strong turbulence progressed on schedule. An investment strategy was implemented in which HEL test technologies			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 5: *Directed Energy Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

are shifting from supporting chemical laser weapons systems to the class of solid state laser systems that are currently in development.

In the area of HPM energy on target, a target board to measure the full spatial and temporal profile of W-band millimeter wave systems in real-time was developed. Technologies to support the testing of area denial microwave weapons remained an area of focus, with a combination of ongoing and newly initiated activities. These efforts include a number of sensor development projects addressing the need to measure the electric and magnetic fields associated with the HPM incident on a target. This capability, employing an optical data link, must operate non-intrusively and have the ability to capture data without being negatively impacted by the effects of the HPM on the measurement system.

FY 2010 activities included work on the urgent need to characterize HPM sources and performance of HPM systems to perform C-IED operations, including an effort to develop an electromagnetic properties measurement system of soil which will greatly improve the ability to test the effectiveness of C-IED systems. Finally, a number of efforts focused on developing technology to support testing of the vulnerability of DoD systems to HPM threats, including technologies to adjust beam power, polarization, wavelength, and bandwidth of an emulated threat.

FY 2011 Plans:

Within the HEL area, efforts will focus on measuring energy on target and characterizing effects on target using onboard sensing. In addition, test technologies will focus to the characterization of solid state laser effects on targets in support of weapons systems in development and demonstration by the Army, Navy, and Air Force. Technologies to support the measurement of laser lethality on rockets, artillery, mortars, and unmanned air vehicle targets will remain a key area of investment. Furthermore, efforts to characterize beam propagation through the atmosphere will center on the maritime environment in support of emerging needs of the Navy. Investment will be placed in laser safety software and hardware to allow testing at multiple test ranges without affecting aircraft and space sensors.

In the area of HPM, the efforts to provide non-intrusive electric field and magnetic field sensors will continue, along with new efforts to provide measurements of induced currents. These test technologies are needed to determine the effects of HPM on electronic systems to support a number of area denial HPM weapons in development. Modeling and simulation of HPM effects on systems will receive increased attention. In the area of C-IED, technologies to measure soil electromagnetic properties will be continued along with modeling and simulation efforts to support testing of HPM C-IED weapons. Enhanced sensor and simulation tools are expected for determining the effects of HPM threat systems on DoD systems in accordance with MIL-STD-464B.

FY 2012 Plans:

In FY 2012, the investments in HEL will target the technologies to support the testing of HEL energy on target, as well as the HEL effects of solid state lasers and fiber laser systems. As the development of electromagnetic rail guns and the free electron lasers advance, investments in test technologies supporting these weapon systems will be initiated. Tunable over a wide range,

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 5: *Directed Energy Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
free electron lasers present unique testing challenges for open air testing, including measuring laser energy on target as well as characterizing the beam propagation and thermal blooming effects. Test technologies will be pursued to support testing of HPM systems with longer ranges over broader areas, as well as the ability to measure collateral damage effects. Several systems currently in development are scheduled to be nearing operational testing in the FY 2012 timeframe and will require additional investments in simulation of HPM effects to adequately assess operational effectiveness. The development of test technologies supporting MIL-STD-464B will continue and expand to address emerging threats.			
Accomplishments/Planned Programs Subtotals	20.826	19.965	10.899

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 6: *Netcentric Systems Test*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
6: *Netcentric Systems Test*	10.893	14.384	19.092	-	19.092	21.508	13.697	12.638	15.056	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Net-Centric Systems Test (NST) Technology Area is pursuing technologies to test our ability to fight in an information age by advancing technologies that assess the interoperability, accuracy, and mission effectiveness of information systems supporting Joint Net-Centric Operations (JNO). Information systems and weapon/ sensor platforms that support the kill chain in a Joint operation must provide an accurately transfer of timely data, such as target tracks, weapons allocation, mission tasking and situational assessment, as it is passed between different systems, Services and coalition participants. NST technologies advance the test tools (test planning, test execution, test control, and analysis) that enable the virtual integration of the Services' weapon laboratories and open air ranges. Using simulations and hardware-in-the-loop laboratories, the effectiveness of Joint missions can be assessed in terms of System-of-Systems interoperability and effectiveness in executing Joint mission operations, including testing of weapons and Command and Control (C2) systems accessing and providing information to the Global Information Grid (GIG). Furthermore, the NST technology area develops new test technologies that support the assessment of systems and networks to defend against cyber attack. The NST portfolio enables the test community to "test like we fight" by replicating net-enabled, Joint mission operations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Netcentric Systems Test	10.893	14.384	19.092
FY 2010 Accomplishments: NST has placed an emphasis on test technologies supporting the abilities to manage a net-centric test battlespace, including planning a complex, multi-player, mission level net-centric test in a distributed Live-Virtual-Constructive simulated environment and controlling test execution through management of the mission scenario. In FY 2010, NST developed new test technologies that allow test personnel to examine the feasibility of proposed test architectures to achieve the desired test objectives and to automate the process of constructing the test environment. In addition, investments were applied in technologies that enables near real-time analysis of joint mission threads. These technologies have already been applied in test venues to baseline the Joint Close Air Support mission thread. Mission level net-centric tests are most often conducted over a distributed test network. Test personnel require the ability to manage this network and control the test systems connected via the network. NST advanced technologies to support the execution of distributed tests with active network control, enhanced the degree of dynamic management of the test infrastructure, and improved the integration of Service laboratories and test ranges by transitioning new technologies into the Test and Training Enabling Architecture (TENA). NST is investing in technologies to test military systems that employ Service-Oriented Architectures (SOA). In FY 2010, NST transitioned test technologies to the Central Test and Evaluation Investment Program (CTEIP) Interoperability Test and Evaluation Capability (InterTEC) project to collect SOA-related performance data on new GIG-enabled intelligence systems. In addition,			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 6: *Netcentric Systems Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
NST transitioned to the InterTEC project an agile tactical message protocol parser that can collect, display, and analyze different Service communication protocols used in the Joint mission kill chain. In FY 2010, NST continued ongoing efforts to develop test technologies automating Net-Ready Key Performance Parameter (KPP) evaluations and to replicate the net-centric battlespace to enable realistic testing of system and network capabilities to defend against and fight through a cyber attack. ***FY 2011 Plans:*** In FY 2011, NST will focus on test technologies that upgrade simulation and stimulation capabilities to provide a more accurate representation of the battlespace environment. The technology for an enterprise tool will be developed that will enable simulation of a wide range of network and host-based information operations effects that can be centrally managed and controlled. In addition, test technologies to allow the test personnel to emulate red cyber warfare capabilities will be developed, expanding the types of attacks simulated on systems under test. New test technology development will be continued to extend TENA to embedded instrumentation and smart devices, as well as optimize data structures to operate more efficiently over wireless networks. Additionally, NST will continue the development of technologies to support the measurement and analysis of the net-centric test environment. The analysis of joint mission threads in near real-time will be assisted by the development of a test technology that will allow effective characterization and replication of JNO mission threads. A test technology to provide automated Net-Ready Key Performance Parameter compliance analysis will be completed and transitioned to the CTEIP InterTEC project. ***FY 2012 Plans:*** In FY 2012, NST will focus on providing technology to enable the NST architecture to evaluate mission effectiveness. A test technology that will assist with this need by providing intelligent test analytic and visualization tools to support Joint mission effectiveness, net readiness, and joint interoperability evaluation will transition to the CTEIP InterTEC project. Additionally, work will continue on developing technologies to improve the ability to recreate the net-centric test battlespace, including development of test technologies required to validate and verify the net-centric test environment. The cyber attack simulation/stimulation system will be further expanded to represent coordinated network attacks (such as, bot attacks) on systems under test. The testing of SOA will be emphasized through the research and development of instrumentation and analysis tools utilizing embedded agent-based technologies. Additional test technology development will be conducted in semantic interoperability and defining ontologies that formalize concepts pertaining to distributed test resources in a Net-Centric Joint Mission Environment. Development will continue on technologies to support the use of TENA over a broad range of networks and to provide common interoperability architecture. Moreover, NST will initiate efforts to develop technologies that analyze the impact of cyber and Information Operations and to support the Information Assurance certification of the test environment.			
Accomplishments/Planned Programs Subtotals	10.893	14.384	19.092

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 6: *Netcentric Systems Test*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 7: *Unmanned and Autonomous System Test*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
7: *Unmanned and Autonomous System Test*	2.583	3.658	6.724	-	6.724	10.250	9.561	11.973	9.695	Continuing	Continuing

A. Mission Description and Budget Item Justification

Supporting every domain of warfare and poised to support the vast variety of missions, Unmanned and Autonomous Systems (UAS) are operating in space, in air, on land, on sea, undersea and in sub-terrain conditions. The emergence of robotics and other forms of UAS in the battlespace brings a host of revolutionary capabilities that will profoundly influence warfare. The Unmanned and Autonomous Systems Test (UAST) Technology Area addresses current and emerging challenges associated with the test and evaluation of these critical warfighting assets. UAST is developing test technologies to stimulate, instrument, measure, and assess the capability of an autonomous system to perceive its environment, process information, adapt to dynamic conditions, make decisions, and effectively act on those decisions. A principal tenant of UAST is to provide the test technologies that will effectively measure performance and characterize risk, thereby increasing the warfighter's trust in autonomous systems. Current DoD test capabilities and methodologies are insufficient to address the testing of increasingly autonomous units and teams of unmanned systems operating in unstructured dynamic battlespace environments. Furthermore, advancements are being made in developing system-of-autonomous-systems, working in concert as a swarm or pack and in close proximity with humans. New test technologies are needed to stress the collective set of autonomous systems under realistic conditions, predict emergent behavior of autonomous systems, emulate the complex environment, and assess mission performance of these highly coupled systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Unmanned and Autonomous System Test	2.583	3.658	6.724
FY 2010 Accomplishments: FY 2010 activities focused on test technologies to create a test framework for UAS testing to predict autonomous behavior and verify safe operations in a test environment. Test technologies to support instrumentation, protocols, predictive models, and test measures/methods are being developed to test UAS performance, collaboration, and interoperability. UAST completed technology development on a framework that enables systematic and structured testing of UAS systems using a combination of simulation, hardware-in-the-loop, and live testing. Within a week of this delivery, test personnel were able to execute test plans quickly and efficiently, and verify UAS performance with respect to command and control navigation approaches utilizing non-line-of-sight techniques, collision avoidance, team coordination, and fault tolerance under various failure modes and bandwidth constraints. Test technology solutions progressed for the development of models and simulations of environments at the proper fidelity to predict the behavior of intelligent systems and Systems-of-Systems. These test technologies will enable planning complex UAS tests to facilitate design of the test scenario, construction of the test environment, instrumentation and analysis planning, and system safety assessments. Furthermore, test technology progressed to provide an integrated, agent based framework that			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 7: *Unmanned and Autonomous System Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
supports “fail safe” methods to control and disarm a weaponized UAS. This test technology will greatly assist in ensuring safe operations of lethal UAS missions on the test ranges. ***FY 2011 Plans:*** In FY 2011, UAST will address test requirements unique to UAS by investing in tools to predict, emulate, and assess behaviors and anomalies to expedite acquisition of UAS for the warfighter. Efforts will be undertaken to create emulation technologies, which use rapid data collection methods to appropriately stimulate systems under test. Additional efforts will focus on ground truth maps with varying resolution for comparison with UAS live test data to support performance assessment across land, air, and maritime environments. Test technologies will be established to assess increased autonomy of single, multiple, and collaborative sea surface vehicles to provide insight into control, performance, and cooperative unmanned undersea vehicle (UUV) navigation. These investments include development of models of UUV operation in remote, inaccessible, and dynamic environments. This test technology will enable UUV test personnel to guide UUV development and deployment, help define testing for cooperating underwater vehicles, and advance fielding of autonomous undersea systems that are suitable, effective, and survivable. New efforts will be initiated to extend the physical limits of test and training ranges to emulate a rich, dense UAS battlespace environment with adequate fidelity using simulations, developing adaptive target controls and instrumentation to stimulate a system-of-autonomous-systems, and test technology for unobtrusive fail-safe mechanisms to terminate or assume control of an autonomous system under test. ***FY 2012 Plans:*** Efforts in FY 2012 will focus on technology for instrumentation and analysis of UAS testing to furnish data that supports the optimization of mission performance, as well as test technology to support the automation of test planning and test scenario synthesis. UAST will invest in efforts to enable dynamic construction, control, and measurement of complex system-of-autonomous-systems. Test requirements will expand to integrate multi-UAS test beds that support a simulation-based methodology to seamlessly integrate constructive simulation, UAS-in-the loop simulation, and live UAS tests. UAST will deliver complementary tools to predict UAS behavior by monitoring how autonomous systems process data in response to environmental changes. Simulated systems will replicate multiple platforms for the development of multi-platform behaviors, supporting repeatable events, and detailed system/event logging. Modeling and simulation techniques will be expanded to provide high fidelity representations of appropriate environmental complexity in order to stress the UAS and establish confidence in the safety and capabilities of future systems. New efforts will be initiated to instrument and assess the autonomy logic processing, developing embedded test agents to unobtrusively extract and correlate flow from stimuli to output as related to predicted behavior, test technology to predict and assess emergent behavior of cooperative swarms of intelligent systems operating in dynamic environments, and instrumentation and analytics to measure machine-to-machine interactions of cooperative, intelligent UAS in a mission context.			
Accomplishments/Planned Programs Subtotals	2.583	3.658	6.724

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 7: *Unmanned and Autonomous System Test*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 8: *Common Range Integrated Instrumentation System*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
8: *Common Range Integrated Instrumentation System*	6.500	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Department of Defense has a critical need for enhanced test and evaluation (T&E) instrumentation to support advanced aircraft, avionics, and weapons system testing. The Common Range Integrated Instrumentation System (CRIIS) is a Tri-Service project that provides a family of capabilities to improve time-space-position information (TSPI) accuracy in low- to high-dynamic test environments and data link throughput capabilities using spectrally efficient data links. CRIIS participant packages will be highly miniaturized in both pod-mounted and internally-mounted configurations.

CRIIS is highly dependent upon advanced technology development in the areas of high-accuracy TSPI and spectrally efficient, high throughput data transmission.

CRIIS will replace the aging Advanced Range Data System (ARDS), which was developed in the mid-1980s, suffers from parts obsolescence, and is unable to provide the accuracy and data throughput required by advanced weapon systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Common Range Integrated Instrumentation System	6.500	-	-
FY 2010 Accomplishments: Completed Phase I Risk Reduction and Technology Maturation for high throughput, spectrally efficient data link. Completed Phase I Risk Reduction and Technology Maturation for high accuracy TSPI. Accomplished a field test demonstration and Technology Readiness Assessment. Transitioned these technologies to the Central Test and Evaluation Investment Program for CRIIS development activities.			
FY 2011 Plans: N/A			
FY 2012 Plans: N/A			
Accomplishments/Planned Programs Subtotals	6.500	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 8: *Common Range Integrated Instrumentation System*

E. Performance Metrics

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 9: *Multi-Level Security for T&E*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9: *Multi-Level Security for T&E*	-	-	4.950	-	4.950	5.556	5.682	7.093	6.927	Continuing	Continuing

A. Mission Description and Budget Item Justification

Multi-level security (MLS) technologies for Test and Evaluation (T&E) will allow information to flow freely between testers who have the appropriate security credentials to access mission essential information while preventing leaks to unauthorized recipients. MLS test systems must incorporate three essential features: first, the system must enforce these restrictions regardless of the actions of system users or administrators, second, enforce these restrictions with incredibly high reliability, and third, allow assured acess for the bidirectional flow of information classified at multiple levels of security to accredited parties across the test infrastructure. These requirements have led developers to implement specialized security mechanisms and apply sophisticated techniques to review, analyze, and test those mechanisms for correct and reliable behavior. These specialized mechanisms constitute point solutions that are certified for use in a specific system configuration and for a particular network architecture, thereby resulting in the need for numerous solutions to address varied test environments. The consequence of this uniqueness is a low degree of efficiency coupled with a low degree of capability.

The MLS needs of testing have recently grown significantly to include: (1) new test concepts and related infrastructure enhancements, such as distributed testing over a national test network and passing test data over telemetry streams of multiple classification levels; (2) test operations in an information rich battlespace, such as testing of network centric operations; (3) the need to exchange information with systems and people that have differing levels of authorization for information access, such as testing with coalition partners; and (4) testing of systems that produce, transmit and consume information of varying levels of classification, such as information operations. Test technologies that enable the aforementioned test capabilities will significantly increase efficiency and generate cost savings.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Multi-Level Security for T&E	-	-	4.950
FY 2010 Accomplishments: No T&E/S&T investments were applied to MLS in FY 2010. The T&E/S&T Program is closely monitoring the MLS Joint Network Test Environment project being executed under the Central Test and Evaluation Investment Program (CTEIP), currently in the requirements definition phase. The requirements for MLS and Cross Domain Solutions, as applicable to testing, will be discerned by this CTEIP project.			
FY 2011 Plans: The T&E/S&T Program will collaborate with CTEIP to assess technology gaps associated with MLS capabilities/requirements as identified in the MLS Joint Network Environment project.			
FY 2012 Plans: Based upon the results of the requirements definition and technology assessment process undertaken in concert with CTEIP, T&E/S&T investments will be placed to mature the required technology and mitigate associated risk for the development of MLS			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603941D8Z: *Test and Evaluation/Science and Technology*	PROJECT 9: *Multi-Level Security for T&E*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
test capabilities. Abilities to enable reconfigurable/reprogrammable software cross domain solutions, bidirectional data guards, and MLS in open-air transmission are among the key enabling technologies requiring T&E/S&T investment.			
Accomplishments/Planned Programs Subtotals	-	-	4.950

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	13.351	23.310	-	-	-	-	-	-	-	Continuing	Continuing
P942: *Technology Transfer*	13.351	2.153	-	-	-	-	-	-	-	Continuing	Continuing
P949: *Technology Transition Initiative*	-	21.157	-	-	-	-	-	-	-	Continuing	Continuing

Note

FY 2011 changes from FY 2010 reflect realignment of resources from the following program element into Technology Transfer and Transition to benefit management communications, fiscal tracking, budget justification and overall program resource management of Transfer/Transition efforts:
PE 0603826D8Z Quick Reactions Special Projects, Technology Transition Initiative (Transfer into P949).

FY 2012 changes reflect reallocation of funds from TTI to higher priority DoD requirements.

A. Mission Description and Budget Item Justification

The Technology Transfer and Transition (TT&T) program (Program Element 0603942D8Z) has two sub-elements: the Technology Transfer program (P942), and Technology Transition Initiative (P949).

Defense Technology Transfer (P942) was referred to in previous budgets as Defense Technology Link (TechLink). This change serves to distinguish the Technology Transfer program from one of the program's successful contractors, TechLink of Montana State University. Defense Technology Transfer's three-fold mission is (1) integration of advanced commercial-sector technologies into Department of Defense (DoD) systems, particularly from nontraditional defense contractors; (2) spinoff of DoD-developed technologies to industry for product development and to make these technologies available for military acquisition; and (3) establishment of collaborative Research and Development (R&D) projects with the private sector for cost-sharing of new dual-use technology development.

Defense Technology Transfer has been highly successful at helping the Department transfer its technologies to U.S. companies, and making these technologies available for both military and commercial applications. Technology Transfer is highly cost-effective with elements achieving significant Return on Investment (RoI) to DoD. For example, TechLink has provided a RoI to DoD of 4:1 on funds expended to date. This efficiently run organization currently accounts for 50 percent of all DoD patent license agreements (PLA) and has brokered over 650 PLAs, Cooperative Research and Development Agreements (CRADA) and other R&D partnerships involving innovative companies new to DoD.

The fiscal controls above represent the investment of the TT&T Program funding for the TTI Program (P949). The Technology Transition Initiative (TTI), authorized by Title 10 and Section 242 of the FY2003 Defense Authorization Act, facilitates the rapid transition of new technologies from the Department of Defense (DoD) science and technology (S&T) base into DoD acquisition programs. The program addresses the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter. The TTI program is mandated by Congress and receives high congressional interest.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603942D8Z: *Technology Transfer and Transition*

Since the TTI (P949) program inception in FY 2003, 78 projects have been initiated and 50 are complete. Of the 50 completed projects, 35 (70%) have successfully transitioned to DoD Acquisition Programs of Record or procurement contracts for operational use and subsequent fielding; exceeding the objective of 30% for demonstration programs (Strategic Objective 4-3, Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD (AT&L)).

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	2.219	23.310	20.591	-	20.591
Current President's Budget	13.351	23.310	-	-	-
Total Adjustments	11.132	-	-20.591	-	-20.591
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	0.063	-			
• Funding Realignment of Technology Transition Initiative	-	-	-	-	-
• Other Adjustments	11.069	-	-20.591	-	-20.591

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P942: *Technology Transfer*		
Congressional Add: *FirstLink*	2.400	-
Congressional Add: *MilTech Expansion Program*	1.600	-
Congressional Add: *Center for Innovation at Arlington*	2.700	-
Congressional Add: *National Radio Frequency Research*	4.000	-
Congressional Add: *Program Increase*	0.750	-
Congressional Add Subtotals for Project: P942	11.450	-
Congressional Add Totals for all Projects	11.450	-

Change Summary Explanation

FY 2011 changes reflect realignment of resources from the following program element into Technology Transfer and Transition to benefit aligned management communications, fiscal tracking, budget justification and overall program resource management of Transfer/Transition efforts:

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*

PE 0603826D8Z Quick Reactions Special Projects, Technology Transition Initiative (Transfer into P949).

FY 2012 changes from FY 2011 reflect reallocation of funds to higher priority DoD requirements and subsequent program termination.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P942: *Technology Transfer*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P942: *Technology Transfer*	13.351	2.153	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

Defense Technology Transfer was referred to in previous budgets as Defense Technology Link (TechLink). This change serves to distinguish the Technology Transfer program from one of the program's successful contractors, TechLink of Montana State University.

Defense Technology Transfer is an element in the Department's technology transfer, transition, and acquisition activities. Its three-fold mission is (1) integration of advanced commercial-sector technologies into Department of Defense (DoD) systems, particularly from nontraditional defense contractors; (2) spin-off of DoD developed technologies to industry to make these technologies available for military acquisition; and (3) establishment of collaborative Research & Development (R&D) projects with the private sector for cost-sharing of new dual-use technology development.

Defense Technology Transfer has been highly successful at helping the Department transfer its technologies to U.S. companies, and first responders making these technologies available for both military and commercial applications.

Technology Transfer is highly cost-effective with elements achieving significant Return on Investment (ROI) to DoD. For example, TechLink has provided a ROI to DoD of 4:1 on funds expended to date. This efficiently run organization currently accounts for 50 percent of all DoD patent license agreements (PLA) and has brokered over 650 Patent License Agreements (PLAs), Cooperative Research and Development Agreements (CRADAs) and other R&D partnerships involving innovative companies new to DoD.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Marketing of DoD technologies	1.037	1.270	-
Description: Actively market DoD-developed technologies to US companies to establish Patent License Agreements to commercialize these technologies for both civilian and military applications. The multiple objectives of this technology marketing activity are to (1) accelerate the transition of DoD-developed technologies to the warfighter; (2) lower the cost of DoD technology acquisition by developing a larger commercial market for dual-use technologies; (3) provide a return of revenue to DoD labs from commercial spin-off of defense technologies; and (4) fulfill DoD's Congressionally mandated technology transfer directives.			
FY 2010 Accomplishments: Actively marketed DoD-developed technologies to US companies to establish Patent License Agreements to commercialize these technologies for both civilian and military applications. As an example, TechLink, DoD's Technology Transfer "Partnership Intermediary," facilitated two licensing agreements for a tactical biological sensor (TAC-BIO) developed by the US Army Edgewood Chemical and Biological Command. TAC-BIO meets a pressing need for low-cost, man-portable sensors with real-time responses for detection of aerosolized biological agents. Additional advantages over current technology are the sensor's			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P942: *Technology Transfer*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
low power requirements and minimal need for consumables. The companies that licensed the TAC-BIO technology are Research International of Monroe, WA, and General Dynamics of Charlotte, NC. TAC-BIO promises to help protect US warfighters as well as to significantly enhance homeland defense and security. As another example, TechLink facilitated a licensing agreement between the Walter Reed Army Institute of Research (WRAIR) and Avanti Polar Lipids of Alabaster, AL, for a method of making membrane-specific antibodies that can be used to develop vaccines for deadly viral diseases. Examples include AIDS and hepatitis C. No vaccines currently exist for these two infectious diseases. Over 200 million people worldwide are infected with hepatitis C and 34 million people with HIV. The WRAIR technology also has good potential for treatment of chronic diseases such as cancer. Both military and civilian populations will benefit from commercialization of the WRAIR-developed technology. ***FY 2011 Plans:*** Continue active marketing of DoD-developed technologies to US companies to establish Patent License Agreements to commercialize these technologies for both civilian and military applications. The multiple objectives of this technology marketing activity are to (1) accelerate the transition of DoD-developed technologies to the warfighter; (2) lower the cost of DoD technology acquisition by developing a larger commercial market for dual-use technologies; (3) provide a return of revenue to DoD labs from commercial spin-off of defense technologies; and (4) fulfill DoD's Congressionally mandated technology transfer directives.			
Title: Dual Use Technology Development ***Description:*** Actively promote and broker Cooperative Research and Development Agreements (CRADAs) between DoD labs and industry for development of technology with both commercial and military applications. This activity will particularly focus on nontraditional defense contractors and is intended (1) to help lower the expense of new defense-related technology development through cost-sharing with industry, and (2) to help DoD benefit from private-sector technology investments and innovations. As an example TechLink facilitated a CRADA and a PLA between the Army Edgewood Chemical Biological Center (ECBC) and BVS, Inc. of Missoula, Montana for an advanced integrated virus screening detection system. This system can rapidly screen for a wide variety of viruses that affect humans, wildlife, and livestock such as avian influenza in chickens. The CRADA provides for BVS to contribute to development of a comprehensive viral database at ECBC. ***FY 2010 Accomplishments:*** Continued to actively promote and broker Cooperative Research and Development Agreements (CRADAs) between DoD labs and industry for development of technology with both commercial and military applications. Broker new CRADAs between DoD labs and industry, thereby enabling DoD and industry to leverage technology development efforts by both parties. ***FY 2011 Plans:***	0.564	0.574	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P942: *Technology Transfer*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Continue to execute program plan with objective to achieve program goals of an equal or higher output than the previous year.			
Title: Spin-In of Advanced Commercial-Sector Technologies ***Description:*** Actively promote the DoD Small Business Innovation Research (SBIR) (focus on Phase III contracts) and Independent Research and Development (IR&D) programs to companies throughout the United States in order to help DoD identify, fund, acquire, and integrate private-sector innovations and advanced commercial technologies into DoD systems. ***FY 2010 Accomplishments:*** Continue to actively promote the DoD Small Business Innovation Research (SBIR) (focus on Phase III contracts) and Independent Research and Development (IR&D) programs to companies throughout the United States in order to help DoD identify, fund, acquire, and integrate private-sector innovations and advanced commercial technologies into DoD systems. ***FY 2011 Plans:*** Continue to execute program plan with objective to achieve program goals of an equal or higher output than the previous year.	0.300	0.309	-
Accomplishments/Planned Programs Subtotals	1.901	2.153	-

	FY 2010	FY 2011
Congressional Add: FirstLink ***FY 2010 Accomplishments:*** FirstLink - a congressionally added effort - is officially called the Department of Defense's National Center of Excellence for Commercialization and Technology Transfer for First Responder Technologies. FirstLink assessed user needs and priorities, collected and evaluated potential DoD technologies for first responder use, identified non-DoD technologies that address DoD and first responder needs, and created and executed a marketing plan for these technologies. Measures of success include technologies made available for first responder use. As an example, FiirstLink determined that a Cooperative Research and Development Agreement (CRADA) would be the proper tool with which to assist in further development of the technology. FirstLink introduced IQ Corporation to the United States Army Medical Research Institute for Infectious Diseases (USAMRIID). On October 19, 2009, CRADA documentation commenced regarding the testing of IQ Corporation's Anthrax Immunity at USAMRIID. Funding for the CRADA was provided by Biomedical National Institute of Allergy and Infectious Diseases (NIAID), a division of the National Institute of Health (NIH). The CRADA was finalized and research was initiated on April 15, 2010 with USAMRIID. It is titled "Anthrax Therapy".	2.400	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P942: *Technology Transfer*

	FY 2010	FY 2011
Under this CRADA USAMRIID will perform subject studies. IQ Therapeutic will provide the antibodies for the adjunct therapy efficacy studies and collaborate on study design. NIAID will provide the funding for the model development and continue to collaborate on study design.		
Congressional Add: MilTech Expansion Program ***FY 2010 Accomplishments:*** MilTech Expansion is a congressionally added effort to facilitate Technology Transfer functions, focused specifically on providing critical engineering, manufacturing, and business development assistance to small companies. MilTech is a non-profit entity of Montana State University. Assisted the transition of technologies from innovative small companies to DoD operational use, supporting the Technology Transfer functions of marketing of DoD technologies, dual use technology deployment, and spin-in of advanced commercial-sector technologies. As an example, MilTech was tasked by the Marine Corps Systems Command to assemble a team of private sector experts to examine every item carried, consumed, or worn by a Marine Expeditionary Rifle Squad (MERS). The purpose was to focus on weight and volume reduction, human factors, and mobility improvements. MilTech assembled a team of 18 material, design, integration, and manufacturing experts. Within four months, the MilTech assembled team identified over 175 specific recommendations grouped by degree of complexity to achieve changes to the gear, produced several first level prototypes, improved weight displacement design to reduce physical stress, and identified collective changes that could reduce overall weight by over 20%. The MERS program office was provided a complete set of specific recommended changes grouped by degree of complexity for adopting changes. The Marine Corps evaluated all recommendations as part of their efforts to further develop and implement changes with greatest benefit.	1.600	-
Congressional Add: Center for Innovation at Arlington ***FY 2010 Accomplishments:*** Center for Innovation at Arlington is a congressionally added effort to facilitate Technology Transfer functions. A Partnerships Intermediary Agreement will be signed by July 30, 2010. ***FY 2011 Plans:*** The Center for Innovation at Arlington will establish a capability to integrate federal, state, regional, and local entities to accelerate transfer of technologies from Research and Development to efficient and affordable production. This will allow DoD purchases from commercial sources.	2.700	-
Congressional Add: National Radio Frequency Research ***FY 2010 Accomplishments:*** The National Radio Frequency Research congressional add was executed via contract with the RF Alliance to develop a consortium of academia, manufacturers, and government laboratories	4.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P942: *Technology Transfer*

	FY 2010	FY 2011
for the purpose of identifying RF Technology ready for transition and developing partnerships. The RF Alliance supports evaluation of proposals and facilitates the transition of projects into government systems. Accomplishments included funding three FY10 projects; Low Temperature Co-fired Ceramics, Active Array Auto-calibration, and Tunable Microwave Filters. Held a successful Conference and Workshop at Purdue University. Transitioned one technology: Polyphase Microwave Quadrature Modulators to upgrade 8 GHz OQPSK Satellite uplinks.		
Congressional Add: Program Increase ***FY 2010 Accomplishments:*** Congressional add for program increase used to increase funding for the TechLink Core	0.750	-
Congressional Adds Subtotals	11.450	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

For FY 2010: establish patent license agreements (PLAs) totaling approximately 40 percent of all DOD PLAs and assist in the brokering of over 400 Cooperative Research and Development Agreements (CRADAs)

For FY 2011: establish patent license agreements (PLAs) totaling approximately 40 percent of all DOD PLAs and assist in the brokering of over 400 Cooperative Research and Development Agreements (CRADAs)

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P949: *Technology Transition Initiative*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P949: *Technology Transition Initiative*	-	21.157	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY 2011, TTI resources were transferred from Quick Reaction Special Projects (PE 0603826D8Z) to Technology Transfer and Transition (PE 0603942D8Z) as part of an effort to more effectively align interwoven program efforts that will benefit management communications, budget justification, fiscal tracking and improve overall program resource management of Transfer/Transition efforts.

FY 2011 changes reflect realignment of resources from the following program element into Technology Transfer and Transition to benefit aligned management communications, fiscal tracking, budget justification and overall program resource management of Transfer/Transition efforts.
PE 0603826D8Z Quick Reactions Special Projects, Technology Transition Initiative (Transfer into P949).

FY 2012 changes from FY 2011 reflect reallocation of funds from TTI to higher priority DoD requirements.

A. Mission Description and Budget Item Justification

The Technology Transition Initiative (TTI), authorized by Title 10 and Section 242 of the FY2003 Defense Authorization Act, facilitates the rapid transition of new technologies from the Department of Defense (DoD) science and technology (S&T) base into DoD acquisition programs. The program addresses the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter. The TTI program is mandated by Congress and receives high congressional interest.

Since the program inception in FY 2003, 78 projects have been initiated and 50 are complete. Of the 50completed projects, 35 (70%) have successfully transitioned to DoD Acquisition Programs of Record or procurement contracts for operational use and subsequent fielding; exceeding the objective of 30% for demonstration programs (Strategic Objective 4-3, Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD (AT&L)).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Electronic Image Intensifier for Pilotage (Army)	-	1.100	-
Description: This project will integrate Electronic Image Intensifier (EI2) technology into a lightweight sensor for the Apache Modernized-Pilot's Night Vision System (M-PNVS). Four form-fit, function and flight ready EI2 prototypes will be engineered, built, and delivered to PM Apache for aircraft qualification and users evaluation flights. The EI2 camera will provide performance that is equal to or greater than the current aviator's night vision goggles and at the same time allow for image fusion with the second generation Forward Looking Infrared (FLIR) on the Apache helicopter.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P949: *Technology Transition Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Program Outputs and Efficiencies: meet pilotage requirements for dynamic motion, resolution, and contrast through improved readout electronics and high definition format (1920 x 1080); exit criteria to be met include Aviator's Night Vision Imaging System (ANVIS) performance and $35 thousand per camera cost; four pre-production prototype cameras delivered for operational flight testing in FY 2011. TTI funding accelerates the transition of this capability by two to three years. This project is funded in FY 2010 via the Quick Reaction Special projects program element. ***FY 2011 Plans:*** Integrate prototype into Apache aircraft; complete aircraft qualification, operational flight testing and initiate procurement activities.			
Title: Medium Caliber Cartridge Improvements using Micro Electro-Mechanical Systems and Direct Write Explosive Ink ***Description:*** 40 millimeter (mm) high-explosive, dual-purpose (HEDP) M433 and M430 cartridges have been in service since the 1950's and 1970's respectively, and are used with the M203 low-velocity grenade launcher and the MK-19 grenade machine gun by all services. Both cartridges use point detonating fuzes with mechanical safe and arm (S&A) devices which do not reliably detonate on soft impact targets or high graze angles. The objective of this effort is to improve the reliability of these cartridges through a Micro-Electro-Mechanical (MEMS) fuzing system that incorporates electronic initiation, improved target sensing using paired MEMS impact sensors, self-destruct capability, command arm enable, more accurate arming distance, and automated explosive ink loading. In addition to improved reliability, these design enhancements will reduce volume and cost. Outputs and efficiencies: Incorporate impact sensors that will sense initial impact and electronically send a signal to initiate the explosive train for improved lethality and improved reliability on soft targets (from 50 percent current performance to 90 percent), and also significantly reduce the number of duds on the battlefield and training ranges. The 40mm MEMS Fuze also will require less volume providing room for improvements in lethality or other future alternate applications. TTI accelerates transition of this technology from the Army Armament Research, Development and Engineering Center (ARDEC) to Project-Manager Soldier Weapons (PM-SW) in approximately three years. This project was funded in FY 2010 via the Quick Reaction Special projects program element. ***FY 2011 Plans:*** Award fuze production contract; receive 300 MEMS S&A deliverables from S&A Prime contractor; receive 300 fuze deliverables; conduct fuze qualification testing, complete transition.	-	1.300	-
Title: Precision Fires Image (PFI) Software Suite Handheld Capability (Navy)	-	1.400	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P949: *Technology Transition Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Currently Overseas Contingency Operations (OCO) missions are planned using traditional means and require dismounted operators, (conventional and Special Operations Forces (SOF)), who do not carry laptop computers. The mission set is currently supported by paper. The objective of this project is to integrate Battlespace Awareness (Mission Planning, Force Protection, Direct Action, etc.) capability on a Windows CE/mobile handheld computer by building upon already proven and deployed technology. The availability of these software tools on a handheld computer will immediately advance warfighter capabilities by enhancing situational awareness, precision targeting, and rapid employment at the tactical level. Program Outputs and Efficiencies: This project will generate and transition a software suite that provides image, video, and geographical capabilities on the Army's Pocket Sized Forward Entry Devices (PFED) and compatible Special Operations Forces Windows CE/mobile handheld computers. These forward operating Battlespace Awareness applications will be built around the previously transitioned and deployed Precision Fires Image (PFI), which is a National Geospatial-Intelligence Agency (NGA) validated, Central Command (CENTCOM) approved, image based targeting tool for coordinate seeking weapons. Integration to the handheld computer will be advantageous in achieving advanced mission capability with less weight, space, and provide shorter operational readiness delays. The TTI funding will accelerate the acquisition and integration of this handheld software capability by two to three years. This project was funded in FY 2010 via the Quick Reaction Special projects program element. ***FY 2011 Plans:*** Deliver spiral upgrades to include the following capabilities: (1) Provide Close Air Support (CAS) safety issue capability for requesting operators; (2) Integrate with the Rapid Delivery of Online Geospatial-Intelligence RDOG) NGA program to provide current imagery directly to the warfighter; (3) Integrate Key Length Variable (KLV) data from Unmanned Aerial Systems (UAS) through sensor video feeds, which provides sensor point of interest on precision imagery; (4) Integrate various Laser Range Finder (LRF) data from operator suites for automatic target reporting and visual representation; (5) Incorporate digital communications to support Variable Message Format (VMF) CAS missions from the handheld to various dismounted radio combinations; (6) Transmit Gridded Reference Graphics (GRG) data to other PFI viewers for Situational Awareness (SA) and battlefield updates			
Title: Hellfire Height of Burst (HOB) Sensor (Army) ***Description:*** The Hellfire Height of Burst Sensor is a miniaturized radio frequency (RF) target detection device that will be integrated into the new Electronic Safe and Arm Device (ESAD) being incorporated into the next generation Hellfire missile (Hellfire R). The HOB sensor provides for improved lethality against targets in the open by detonating the warhead at a height above ground optimized for these targets. This TTI project funds the final design and engineering of the HOB sensor optimized for	-	2.300	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P949: *Technology Transition Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Hellfire, provides component and system level environmental and hardware-in-the-loop testing, and allows two flight tests of HOB sensor equipped missiles. Program Outputs and Efficiencies: The HOB sensor will be integrated into the Hellfire missile and undergo hardware-in-the-loop (HWIL), environmental, and flight testing. The final outcome will be two missile flights incorporating the HOB sensor. The first flight will replace the warhead with a telemetry package to record the missile flight data as well as the point at which the HOB sensor triggers the warhead. The second flight will incorporate both the HOB sensor and the Hellfire warhead. Lethality data will be collected to validate the modeled performance against targets in the open. Simulation has shown that the HOB sensor will significantly increase the lethality when fired from platforms that allow a steep angle of impact. TTI accelerates the transition of this capability by two years. This project was funded in FY 2010 via the Quick Reaction Special projects program element. ***FY 2011 Plans:*** Fabricate device verification hardware and integrate into new ESAD for laboratory and HWIL testing. Finalize ESAD modifications to power the HOB sensor and to accept the HOB fire command. Develop system qualification test plans, support pilot line production development and complete transition.			
Title: Hellfire Next Generation Captive Carry Health Monitor (NG-CCHM) ***Description:*** The Hellfire NG-CCHM is a missile health monitoring device that measures and records operational and environmental stresses tailored to the most recent Hellfire missile design, the AGM-114R model. The unit will be a self-powered, low-cost autonomous system capable of measuring and recording key health status parameters. The unit will be an electronic data acquisition device embedded into each missile and will be optimized for long life to automatically monitor temperature exposure, drop shock events and record vibration levels that can cause degradation to the missile over time. Program Outputs and Efficiencies: The primary outputs and efficiencies to be demonstrated in the project are: (1) reduced costs and maintenance burden to Warfighter; (2) increased reliability; (3) enhanced system safety; and (4) increased readiness. TTI accelerates the transition of this capability by two years. This project was funded in FY 2010 via the Quick Reaction Special projects program element. ***FY 2011 Plans:***	-	0.750	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P949: *Technology Transition Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Complete detailed design and build prototype units. Conduct design verification testing and plan captive carry test activities. Conduct captive Carry Testing and begin design update from findings in DVT and captive carry testing. Conduct critical design review and software formal qualification testing.			
Title: Joint Service General Purpose Mask (JSGPM) Filter End-of-Service-Life Indicator ***Description:*** An end-of-service-life indicator (ESLI) has been developed for chemical, biological radiological, nuclear (CBRN) protective mask filters that will alert the user to exchange the filter following exposure to acid gas chemical warfare agents (CWAs). The technology to be transitioned consists of thin colorimetric indicator films coated with pondus hydrogenii (pH) sensitive dyes and reagents that target common functional groups and chemical properties of the major classes of blood agents and select Toxic Industrial Chemicals (TICs). The approach is to place the ESLI along the inside wall of the filter in contact with the carbon bed so it can react with the passing agent wave front to produce a color change, thereby alerting the user to replace the filter well before its gas-life capacity is depleted. Program Outputs and Efficiencies: The Joint Service General Purpose Mask (JSGPM) CBRN filter housing will be equipped with a transparent plastic window to view the indicator response. The ESLI will be designed to provide a visual signal when approximately 20 to 60 percent of the filter's service life capacity is expired, depending on the target agent. The ESLI technology will be transitioned to the M50 JSGPM acquisition program as a spiral upgrade (product improvement) to the current primary CBRN filter. TTI funding accelerates this transition by two years. This is a continuing project funded previously via the Quick Reaction Special projects program element. ***FY 2011 Plans:*** This project will complete contract modification, incorporate a Quality Assurance Surveillance Plan (QASP) with a Performance Requirements Summary, complete design optimization, hold a Critical Design Review, complete fabrication of optimized and final ESLI filter prototypes, and conduct contractor Product Verification Testing. Complete Government Test and Evaluation, hold a Transition Readiness Evaluation review, complete Engineering Change Proposal, and submit for joint service approval.	-	0.450	-
Title: Integrated Information Management System (IIMS) Transition (Air Force) ***Description:*** The Integrated Information Management System (IIMS) is a collaborative situational awareness tool which aids in the management of conventional and Chemical, Biological, Radiological, and Nuclear (CBRN) events at fixed, expeditionary and incident response sites. IIMS includes detector/ warning networks, access to CBRN models, and information exchange with civil sector and coalition partner organizations. IIMS is in the base defense component of the AF Theater Battle Management Core System – Unit Level/Unit Command and Control (TBMCS-UL/UC2). It addresses both conventional and CBRN incidents. It is	-	2.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P949: *Technology Transition Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
replacing the Survival Recovery Center (SRC). It improves decision making and battle management activities in the event of a conventional or CBRN incident. The objective of this effort is to transition IIMS into TBMCS-UL/UC2 Increment Two, and subsequently into the final TBMCS-UC2. The additional IIMS capabilities will augment the fielded TBMC-UL/UC2 to extend original capabilities, provide a stand-alone capability, and to incorporate joint CBRN tools. A successful transition of IIMS to TBMCS-UC2 through this spiral development process will significantly increase the base defense/response capabilities available to the warfighter. Program outputs and efficiencies: TTI funding accelerates the SRC replacement with planned upgrades to IIMS that more efficiently identify and respond to issues preventing the flying mission by 1-2 years. The transition of IIMS into the TBMCS-UC2 N-tier Service Oriented Architecture enables transition of new capabilities into TBMCS-UC2 through the IIMS framework and the adjudication of any Priority I or Priority II software trouble reports at the time of transition. The software will adhere to general quality and reliability standards and include standard software product sets upon delivery (i.e. source code, executable code, documentation, test results). TTI funding accelerates upgrades to integrate sensor/detector networks and improve communications with off-base agencies by 4+ years. This project was funded in FY 2010 via the Quick Reaction Special projects program element. ***FY 2011 Plans:*** Transition of the enhanced IIMS framework and capabilities to TBMCS-UL/UC2 Increment Two is scheduled for 2011. The capabilities include: an interface to the Remote Data Relay sensor/detector/warning network; access to reference documents and response plans; integrated CBRN and other models; information exchange with remote DOD and civilian C2 Systems; tools for building and executing National Incident Management System (NIMS) compliant incident response plans; and the initial third party developer documentation and framework. Full transition to the TBMCS-UC2 Increment One N-tier Service Oriented Architecture is scheduled for late 2011. The capabilities include: a generic interface to sensor/detector/warning networks; tools for accessing and processing asset data including operational impact and consequence management assessments; and tools for evaluating incident response plans. Adjudication of integration issues will follow. A successful test and demonstration in an operationally relevant environment such as a TBMCS-UL/UC2 site, the Port of Ash Shuaybah in Kuwait or the Statue of Liberty National Monument; evaluation by the USAF 46th Test Squadron (TS) for Developmental Test (DT), Functional Test (FT) and Information Assurance (IA) testing resulting in a favorable Authority to Connect (ATC) recommendation; and a signed ATC for TBMCS-UC2 with IIMS for the NIPRNet and SIPRNet.			
Title: Surfactant System for Surface CB Agent Removal	-	0.455	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P949: *Technology Transition Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Mature a multi-purpose surfactant technology to accelerate its transition to the Decontamination Family of Systems (DFoS). There is an immediate and unmet requirement for a cargo aircraft decontaminant. The primary means to decontaminate aircraft is ineffective in decontaminating most Chemical and Biological (CB) hazards and material compatibility issues exist with currently fielded decontaminants and aircraft exteriors. Current decontaminants are single purpose items and carry a significant logistics burden. The surfactant technology will provide the Warfighter with a multi-use, advanced formulation for mitigating CB hazards to operational (threshold) or thorough (objective) levels. MIL-PRF-87937D testing will be conducted to qualify the surfactant system as an aerospace cleaning compound and enable it to be inserted on the Qualified Products List (QPL). The surfactant technology can be used as a routine cleaning compound as well as an aircraft-cleaning compound. TTI accelerates transition by more than two years. Outputs and efficiencies: a) Validate chemical efficacy (via contact and vapor testing) on priority painted materials; b) demonstrate biological efficacy; c) MIL-PRF-87937D qualified product (physical, chemical, toxicological properties, environmental impact). ***FY 2011 Plans:*** Complete CB removal efficacy; Complete MIL-PRF-87937D testing requirements; Submit MIL-PRF-87937D and QPL/General Services Administration (GSA) Registration Package(s) to qualifying authority(s); Complete materials compatibility testing; Prepare and deliver Technology Transition Data package including Manufacturing Readiness Assessment (MRA) report and Technology Readiness Assessment (TRA) report .			
Title: Accelerated Interlocking Mortar Increment Container Technology (Army)	-	0.838	-
Description: The objective of this program is accelerate the transition of interlocking mortar increment container (MIC) design and fabrication technology to ensure uniform propellant ignition and reduce differential pressures which will eliminate a noted safety critical mechanism and reduce the possibility of critical short rounds <80% of intended range) due to shearing of fin blades and asymmetrical burn. The interlocking MIC design eliminates the potential alignment of the open ends of the propelling charges and will greatly reduce the chances of more propellant being on one side of the mortar fin boom. This eliminates the imbalance of the energetics and associated potential problematic pressure differential within the mortar tube. The warfighter will have no chance of a sheared fin failure due to unexpected alignment of propelling charges which, in turn, will reduce the possibility of a critically short flight 120mm rounds in theater. Accelerating the maturation, transition, and insertion of this interlocking "high hat" mortar increment container technology into the 120mm mortar ammo program of record (PoR) will improve safety and accuracy for our light and dismounted ground forces. It also will lay the foundation for potential subsequent application to 60mm and 81mm mortar ammo if warranted .			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603942D8Z: *Technology Transfer and Transition*	PROJECT P949: *Technology Transition Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Program Outputs and Efficiencies: Provides the warfighter with safer mortar ammunition; further prevents the possibility of unexpected short flight of 120mm mortar rounds in theater; improves soldier safety during training. TTI accelerates the deployment of this capability by 18 months. This project was funded in FY 2010 via the Quick Reaction Special projects program element. ***FY 2011 Plans:*** Generate drawings, specifications, and implement Engineering Change proposal into current 120mm Mortar Propelling Charge Contract.			
Title: Transition Initiatives ***Description:*** Funds will address the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter. ***FY 2011 Plans:*** FY 2011 new starts proposals from Services, Agencies, and Combatant Commands are under review. Final selection will be determined prior to the start of the fiscal year.	-	10.564	-
Accomplishments/Planned Programs Subtotals	-	21.157	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the project plans identified above as well. In addition, program completion and success are monitored against program schedule and deliverable stated in the proposals. The metrics include items such as target dates from project work break down schedules, production measures, production goals, production numbers and demonstration goals and dates. Generic performance metrics applicable to the Technology Transition Initiative (TTI) program includes attainment of Strategic Objective 4-3, "Speed technology transition focused on warfighting needs". The metrics for this objective and the objective of TTI is to transition 30% of completing demonstrations projects per year.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0604055D8Z: *Operational Energy Capability Improvement RDT&E*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	-	20.444	-	20.444	26.841	33.376	34.363	35.492	Continuing	Continuing
P455: *Operational Energy Capability Improvement*	-	-	20.444	-	20.444	26.841	33.376	34.363	35.492	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Operational Energy Capability Improvement program element focuses on expediting the development and transition, to include testing, of new energy technologies and initiatives to the warfighter with the intent of increasing combat capability and effectiveness while reducing operating costs. This may include developing tools and instruments required to collect energy usage data; collecting and analyzing energy usage data; and improving modeling and simulation of energy considerations. Efforts undertaken in this program element will seek to spur innovation of promising technologies that can be demonstrated and rapidly fielded to reduce energy requirements for current and future military operations with an emphasis on Jointness and interoperability. Potential programs to be expedited may be proposed from within existing research and development efforts, acquisition programs, or new efforts and programs. Most projects are expected to be accomplished within one to five years given the emphasis on technologies with maturing readiness levels.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	20.444	-	20.444
Total Adjustments	-	-	20.444	-	20.444
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Operational Energy Capability Improvement	-	-	21.000	-	21.000
• DOD Efficiencies - Report, Studies Boards and Commissions	-	-	-0.527	-	-0.527
• Economic Assumptions	-	-	-0.029	-	-0.029

Change Summary Explanation

The Under Secretary of Defense (Acquisition, Technology, and Logistics) established the program element with this budget submission by reallocating resources from within internal resources.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0604055D8Z: *Operational Energy Capability Improvement RDT&E*	PROJECT P455: *Operational Energy Capability Improvement*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P455: *Operational Energy Capability Improvement*	-	-	20.444	-	20.444	26.841	33.376	34.363	35.492	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Operational Energy Capability Improvement program element focuses on expediting the development and transition, to include testing, of new energy technologies and initiatives to the warfighter with the intent of increasing combat capability and effectiveness while reducing operating costs; developing tools and instruments required to collect energy usage data, collecting and analyzing energy usage data, and improving modeling and simulation of energy considerations. Efforts undertaken in this program element will seek to spur innovation of promising technologies that can be demonstrated and rapidly fielded to reduce energy requirements for current and future military operations with an emphasis on Jointness and interoperability. Potential programs to be expedited may be proposed from within existing research and development efforts, acquisition programs, or new efforts and programs. Most projects are expected to be accomplished within one to five years given the emphasis on technologies with maturing readiness levels.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Operational Energy Capability Improvement	-	-	20.444
FY 2010 Accomplishments: None			
FY 2011 Plans: Establish a process to identify and select new energy technologies and initiatives applicable to the warfighter with potential for a rapid and great return in increased combat capability and effectiveness and reduced operating costs.			
FY 2012 Plans: FY12 projects will primarily be determined based on the potential to increase combat capability and effectiveness while reducing operating costs. Selected efforts will be focused, and executable in less than five years. Selected projects will rapidly advance technical maturity with the intent of fielding to operational units in the near-term.			
Accomplishments/Planned Programs Subtotals	-	-	20.444

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0604055D8Z: *Operational Energy Capability Improvement RDT&E*	PROJECT P455: *Operational Energy Capability Improvement*

E. Performance Metrics

None

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0303310D8Z: *Countering Weapons of Mass Destruction Systems (CWMD)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	-	-	7.788	-	7.788	58.562	65.557	68.725	68.819	Continuing	Continuing
P*003: *Countering Weapons of Mass Destruction Systems*	-	-	7.788	-	7.788	58.562	65.557	68.725	68.819	Continuing	Continuing

Note

This project is a new start.

A. Mission Description and Budget Item Justification

The diverse and complex Countering Weapons of Mass Destruction (CWMD) mission space requires an integrated approach towards capability development. Capability development must be based on a systems perspective that links strategic objectives with interconnected or interrelated categorical tasks and associated capabilities. The broad CWMD military strategic objectives and mission areas encompass many nontraditional capabilities for the Warfighter. CWMD is not a separate and isolated mission set unique to DoD, it is intertwined with counter-terrorism and homeland defense. Accordingly, developing an overall CWMD capability should and must leverage counter-terrorism and homeland defense capabilities through integration and synchronization. This program addresses developing an integrated and interconnected CWMD capabilities-based system that defines and enables a comprehensive CWMD steady-state and surge posture. This program also responds to the strategic needs outlined in the President's initiative, stated in his April 2009 speech in Prague; the 2010 Quadrennial Defense Review; and the FY12-16 Defense Planning and Programming Guidance by providing improved timeliness and relevance through modernizing CWMD support to the Combatant Commands, Office of the Secretary of Defense, Joint Staff, Intelligence Community (IC), and other U.S. Government agencies as required. Ensure sufficient funding is available for travel to support the requirements of this program element.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0303310D8Z: *Countering Weapons of Mass Destruction Systems (CWMD)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	7.788	-	7.788
Total Adjustments	-	-	7.788	-	7.788
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Start Program Adjustment	-	-	8.000	-	8.000
• Defense Efficiency - Report, Studies, Boards, and Commissions	-	-	-0.201	-	-0.201
• Economic Assumtions	-	-	-0.011	-	-0.011

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0303310D8Z: *Countering Weapons of Mass Destruction Systems (CWMD)*	PROJECT P*003: *Countering Weapons of Mass Destruction Systems*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P*003: *Countering Weapons of Mass Destruction Systems*	-	-	7.788	-	7.788	58.562	65.557	68.725	68.819	Continuing	Continuing

Note

This project is a new start.

A. Mission Description and Budget Item Justification

The diverse and complex Countering Weapons of Mass Destruction (CWMD) mission space requires an integrated approach towards capability development. Capability development must be based on a systems perspective that links strategic objectives with interconnected or interrelated categorical tasks and associated capabilities. The broad CWMD military strategic objectives and mission areas encompass many nontraditional capabilities for the Warfighter. CWMD is not a separate and isolated mission set unique to DoD, it is intertwined with counter-terrorism and homeland defense. Accordingly, developing an overall CWMD capability should and must leverage counter-terrorism and homeland defense capabilities through integration and synchronization. This program addresses developing an integrated and interconnected CWMD capabilities-based system that defines and enables a comprehensive CWMD steady-state and surge posture. This program also responds to the strategic needs outlined in the President's initiative, stated in his April 2009 speech in Prague; the 2010 Quadrennial Defense Review; and the FY12-16 Defense Planning and Programming Guidance by providing improved timeliness and relevance through modernizing CWMD support to the Combatant Commands, Office of the Secretary of Defense, Joint Staff, Intelligence Community (IC), and other U.S. Government agencies as required. Ensure sufficient funding is available for travel to support the requirements of this program element.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Countering Weapons of Mass Destruction Systems (CWMD)	-	-	7.788
Description: CWMD Systems Development and Integration: • Develop a CWMD common operating picture system that integrates C4ISR, multi-modality intelligence, and other data to support simultaneous operations worldwide and address operational capability gaps • Develop a portfolio management capability based on an integrated system of systems architectural framework to evaluate potential CWMD investments.			
FY 2012 Plans: • Initiate development of a CWMD common operating picture (COP) to leverage and integrate domain awareness, WMD intelligence and other prevention/control data to support global/regional awareness and the command and control of forces for CWMD • Assess and develop steady state posture to provide more rapid, robust responses, develop CMWD concept of operations			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0303310D8Z: *Countering Weapons of Mass Destruction Systems (CWMD)*	PROJECT P*003: *Countering Weapons of Mass Destruction Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Initiate development of a comprehensive, systems-analytical approach to CWMD portfolio management			
Accomplishments/Planned Programs Subtotals	-	-	7.788

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	45.036	32.132	36.798	-	36.798	36.416	35.753	36.529	37.305	Continuing	Continuing
P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	45.036	32.132	36.798	-	36.798	36.416	35.753	36.529	37.305	Continuing	Continuing

Note

We changed the name of the PE from "Nuclear and Conventional Physical Security Equipment" to "Nuclear and Conventional Physical Security/Countering Nuclear Threats." It is important to highlight Combating Nuclear Threats given the potential spread of weapons of mass destruction (WMD) and how WMD threatens the security of the United States, its allies, and US deployed forces. As President Obama has repeatedly stated, nuclear-armed terrorists are “the most immediate and extreme threat to global security,” and thereby to the security of the United States.

A. Mission Description and Budget Item Justification

This program coordinates advanced engineering development for physical security equipment (PSE) technology and systems as well as for combating nuclear threats throughout DoD. The funding has been centralized in this Defense-wide Program Element (PE) since the early 1990s and represents a substantial portion of all DoD PSE RDT&E funding. The program supports the protection of DoD personnel and facilities for nuclear and conventional environments. Priorities for this Program Element’s RDT&E efforts are driven by inputs from QDR guidance, COCOMs (Joint Urgent Operational Need Statements (JUONS)), Services, analysis reports, such as “Protecting the Force: Lessons from Fort Hood (January 2010), the Integrated Unit, Base, and Installation Protection (IUBIP) Cost Benefits Analysis (CBA), and DoD Directive 5210.41M (Nuclear Weapon Security Manual: DoD Nuclear Weapon Environment-Specific Requirements) directed requirements and associated security deviation reports.

The funds are used to provide PSE advanced component development and prototypes for individual Service and Joint requirements that lead to capability in three functional mission areas: (1) nuclear physical security; (2) countering nuclear threats; and (3) conventional physical security. The projects under the Program Element either (a) lead to Programs of Record – which can transition to Program Element 0604161D8Z for systems development and demonstration (SDD); (b) become technology insertions into existing programs; or (c) advance to being a certified COTS product. The overall program element initiatives are coordinated by three Groups: the Security Policy Verification Committee (SPVC), the Countering Nuclear Threats Working Group (CNTWG) and the Physical Security Equipment Action Group (PSEAG). The SPVC, with Air Force, Navy and Defense Threat Reduction Agency (DTRA) membership, reviews and prioritizes nuclear physical security and countering nuclear threat requirements and recommends technology projects for solutions: the CNTWG has oversight over CNT projects, and the PSEAG, with membership by all four Services and DTRA, performs similar functions for conventional requirements and solutions. When applicable, projects overlap both the nuclear and conventional environments, seeking synergism and commonality in solutions.

With few exceptions, each Service sponsors RDT&E efforts for technologies and projects that have COCOM and multi-Service applications. To avoid duplication, the SPVC and PSEAG assign projects to the Services and DTRA, as directed in DoD Instruction 3224.03, to assure continuity and development of expertise in Department-wide key technology areas. Specific examples include the Army being responsible for Interior and Exterior Detection, Security Lighting, Security Barriers

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

and Security Display Units; the Air Force for Exterior Detection/Surveillance, Entry Control, Delay/Denial, Tactical Systems and Airborne Intrusion; the Navy for Waterside Security, Explosive Detection, and Locks, Safes and Vaults; and, under direction from DoD Directive 5210.41M, DTRA for security of Navy and Air Force nuclear assets.

Note: This Program Element is presented in three major categories: (1) Nuclear Physical Security, (2) Countering Nuclear Threats, and (3) Conventional Physical Security

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	36.019	32.132	38.390	-	38.390
Current President's Budget	45.036	32.132	36.798	-	36.798
Total Adjustments	9.017	-	-1.592	-	-1.592
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	9.017	-	-0.240	-	-0.240
• Defense Efficiency Baseline Review	-	-	-0.343	-	-0.343
• Defense Efficiency - Report, Boards, and Commissions	-	-	-0.958	-	-0.958
• Economic Assumptions	-	-	-0.051	-	-0.051

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*		
Congressional Add: *Under Vehicle Inspection System (UVIS)*	2.300	-
Congressional Add: *Roadrunner Convoy Security Unmanned*	4.560	-
Congressional Add: *Pacific Data*	2.000	-
Congressional Add: *Advanced Detection of Special Nuclear Materials*	1.939	-
Congressional Add: *Handheld FDS Terahertz (THz) Spectrometer*	0.050	-
Congressional Add Subtotals for Project: P162	10.849	-
Congressional Add Totals for all Projects	10.849	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

Change Summary Explanation

Reprogramming was used to accommodate the maturation of PSE developmental items from advanced engineering development (BA 4) to system development and demonstration (BA 5). PE 0604161D8Z identifies the offset.

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	45.036	32.132	36.798	-	36.798	36.416	35.753	36.529	37.305	Continuing	Continuing
Quantity of RDT&E Articles											

Note

We changed the name of the PE from "Nuclear and Conventional Physical Security Equipment" to "Nuclear and Conventional Physical Security/Countering Nuclear Threats." It is important to highlight Combating Nuclear Threats given the potential spread of weapons of mass destruction (WMD) and how WMD threatens the security of the United States, its allies, and US deployed forces. As President Obama has repeatedly stated, nuclear-armed terrorists are “the most immediate and extreme threat to global security,” and thereby to the security of the United States.

A. Mission Description and Budget Item Justification

This program coordinates advanced engineering development for physical security equipment (PSE) technology and systems as well as for combating nuclear threats throughout DoD. The funding has been centralized in this Defense-wide Program Element (PE) since the early 1990s and represents a substantial portion of all DoD PSE RDT&E funding. The program supports the protection of DoD personnel and facilities for nuclear and conventional environments. Priorities for this Program Element’s RDT&E efforts are driven by inputs from QDR guidance, COCOMs (Joint Urgent Operational Need Statements (JUONS)), Services, analysis reports, such as “Protecting the Force: Lessons from Fort Hood (January 2010), the Integrated Unit, Base, and Installation Protection (IUBIP) Cost Benefits Analysis (CBA)" and DoD Directive 5210.41M (Nuclear Weapon Security Manual: DoD Nuclear Weapon Environment-Specific Requirements) directed requirements and associated security deviation reports.

The funds are used to provide PSE advanced component development and prototypes for individual Service and Joint requirements that lead to capability in three functional mission areas: (1) nuclear physical security; (2) countering nuclear threats; and (3) conventional physical security. The projects under the Program Element either (a) lead to Programs of Record – which can transition to Program Element 0604161D8Z for systems development and demonstration (SDD); (b) become technology insertions into existing programs; or (c) advance to being a certified COTS product. The overall program element initiatives are coordinated by three Groups: the Security Policy Verification Committee (SPVC), the Countering Nuclear Threats Working Group (CNTWG) and the Physical Security Equipment Action Group (PSEAG). The SPVC, with Air Force, Navy and Defense Threat Reduction Agency (DTRA) membership, reviews and prioritizes nuclear physical security and countering nuclear threat requirements and recommends technology projects for solutions: the CNTWG has oversight over CNT projects, and the PSEAG, with membership by all four Services and DTRA, performs similar functions for conventional requirements and solutions. When applicable, projects overlap both the nuclear and conventional environments, seeking synergism and commonality in solutions.

With few exceptions, each Service sponsors RDT&E efforts for technologies and projects that have COCOM and multi-Service applications. To avoid duplication, the SPVC and PSEAG assign projects to the Services and DTRA, as directed in DoD Instruction 3224.03, to assure continuity and development of expertise in Department-wide key technology areas. Specific examples include the Army being responsible for Interior and Exterior Detection, Security Lighting, Security Barriers

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

and Security Display Units; the Air Force for Exterior Detection/Surveillance, Entry Control, Delay/Denial, Tactical Systems and Airborne Intrusion; the Navy for Waterside Security, Explosive Detection, and Locks, Safes and Vaults; and, under direction from DoD Directive 5210.41M, DTRA for security of Navy and Air Force nuclear assets.

Note: This Program Element is presented in three major categories: (1) Nuclear Physical Security, (2) Countering Nuclear Threats, and (3) Conventional Physical Security

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Automated Vulnerability Evaluation for Risks of Terrorism (AVERT)	2.699	2.953	2.169
Description: NUCLEAR PHYSICAL SECURITY The Department of Defense has a requirement to utilize a standardized approach for Modeling and Simulation analysis to assist in risk management, determining system vulnerabilities and choosing potential upgrades at nuclear weapon-based facilities and installations. AVERT (Automated Vulnerability Evaluation for Risks of Terrorism) is the current commercial off-the-shelf product undergoing software Verification, Validation and Accreditation (VV&A) to determine its feasibility of use in the DoD environment. Both the Air Force and Navy will utilize this product to determine vulnerabilities. ***FY 2010 Accomplishments:*** • Prepared Server in Albuquerque to be moved to DTRA HQ at Fort Belvoir, VA to be placed in the DTRA Experimental Laboratory (DEL) • Renewed AVERT Professional licenses for eight sites. • Completed Validation, Verification and Accreditation (VV&A) confirming software, software development process, modeling process and library development • Trained military and contractor personnel in use of AVERT ***FY 2011 Plans:*** • Provide additional software development/refinement, as required • Continue required training • Provide model products and outcomes to OSD and the Services for use ***FY 2012 Plans:*** - Periodically conduct site security risk assessments - Evaluate and quantify the effectiveness of potential security enhancements - Potential for additional software purchasees/leases, training, programming and modeling			
Title: Swarm Attack Boat Barrier	0.175	0.197	0.192

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: NUCLEAR PHYSICAL SECURITY Both high-value port facilities and docked ships/boats require improved protection. Technologies will be explored and developed to provide improved barrier defense against multi-boat attacks, particularly barrier delay. ***FY 2010 Accomplishments:*** • Developed performance baseline in regards to breaching times for current port security barrier against a variety of threat scenarios. • Evaluated technical approaches to increase surface barrier delay time to meet identified delay requirements. • Established Minimum Performance Levels. ***FY 2011 Plans:*** • Analyze need for development effort. • Full review of Analysis of Alternatives. • Development effort (if necessary). ***FY 2012 Plans:*** - Evaluation of technical approaches to increase surface barrier delay time to meet delay requirements. Primary metric is delay time gains, with secondary metrics of cost, time to install, and waterfront operational impact. - Implementation of hardware derived from project findings.			
Title: Continuous Sound Velocity ***Description:*** NUCLEAR PHYSICAL SECURITY The Navy's Waterside Security System (WSS) requires accurate bulk underwater sound velocity data. The sound velocity data is used to accurately compute the geographic (geo) location of tracks output from the ADCAP WQX-2 swimmer/diver detection sonar. The objectives of this effort are to determine the accuracy and effectiveness of the current sound velocity and motion compensation algorithms in the ADCAP Version 4.0 sonar processor application. Actual data will be collected from an operational site over a period of time. ***FY 2010 Accomplishments:*** • Developed a methodology and needed tools to automatically gather and analyze data from the various sensor types. • Integrated the automatic system into an operational WSS site.	0.170	0.197	0.192

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Gathered the sensor information from the site for analysis. ***FY 2011 Plans:*** • Analyze data from the operational site to determine the accuracy of the ADCAP WQX-2 application's sound velocity and motion compensation algorithms. • Produce a test report that documents the results of the analysis. ***FY 2012 Plans:*** - Production of a test report that documents the results of the analysis to be incorporated into revision to Electronic Harbor Security System .			
Title: Attack Tool and Material Resistance ***Description:*** NUCLEAR PHYSICAL SECURITY The DoD Lock Program, under the direction of the PSEAG, continuously conducts research by testing and evaluating state-of-the-art tools and materials to identify current threats to DoD assets. Based on this research and associated test results, steps can be taken towards developing new standards, countermeasure development, input to modeling and simulation planning, and new design methodology. This is a continuing project. ***FY 2010 Accomplishments:*** • Coordinated with other DoD organizations (Army Research Laboratory) and attended National Advanced Ceramics and Composites Conference. • Performed test and evaluation of advanced, light-weight and rugged emergency response & mining tools. • Provided input to AVERT to update data libraries. • Updated DoD MIL-HDBK 1013/1A & DOE Barrier Handbook with current resistance data. ***FY 2011 Plans:*** • Continuation of test and evaluation against newly identifies tool sets. • Update DoD MIL-HDBK 1013/1A, AVERT, and DOE Barrier Handbook ***FY 2012 Plans:*** • Continuation of test and evaluation against newly identifies tool sets. • Update DoD MIL-HDBK 1013/1A, AVERT, and DOE Barrier Handbook	0.338	0.295	0.384
Title: Secure Wireless Communications Working Group ***Description:*** NUCLEAR PHYSICAL SECURITY	0.635	0.295	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
As an outgrowth of the FY 2007 Nuclear Weapons Summit, the SWCWG was chartered by the Technical Senior Steering Group (TSSG) to study the challenge of using wireless communications with nuclear physical security systems and make assessments/ recommendations for the path ahead. The SWCWG is now in its third year, working closely with other government agencies, to include the Department of Energy, the Nuclear Regulatory Commission, National Nuclear Security Administration and the National Security Agency to find common solutions to common problems. ***FY 2010 Accomplishments:*** • Identified and refined issues within four Integrated Product Teams (IPTs): Policy, Wireless Threat Vulnerability Assessments, Security Classification Guides, and Threat Continuity/Definition • Developed a Best Practices Guide focused on use of wireless communications in nuclear environments ***FY 2011 Plans:*** • Conduct an Inter Agency Table Top Exercise (TTX) to resolve issues identified by four IPTs • Complete and produce an initial living-document version of the Best Practices Guide			
Title: Sub-surface Sensor Algorithm Improvement Program ***Description:*** NUCLEAR PHYSICAL SECURITY The focus of this program is to concentrate on detection, classification, and localization (DCL) software performance rather than sensor hardware to improve underwater sensor performance, especially focused on swimmer detection. The combination of common DCL needs and impending modularization opens up the possibility that an R&D effort specifically focused upon DCL algorithm improvement can provide benefit to the full range of waterfront security constituencies. Objectives are to: (1) produce and deliver improved sub-surface maritime physical security DCL algorithms and (2) create a process by which the performance of DCL algorithms can be consistently and objectively evaluated independent from hardware ***FY 2010 Accomplishments:*** • Formed an Oversight Group (OWG) to monitor project • Established a performance criteria, select algorithms for funding and development • Issued a Request for Proposals (RFP) for candidate DCL algorithms. ***FY 2011 Plans:*** • Complete Algorithm Evaluation • Provide recommendations to Navy Strategic Systems Programs on which algorithms should be integrated into current & future sensor systems	0.274	0.295	0.192

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Set standard for sub-surface data collection ***FY 2012 Plans:*** -Integration of new algorithms into Electronic Harbor Security System .			
Title: Anti-Swimmer Grenade ***Description:*** NUCLEAR PHYSICAL SECURITY Finalize safety and performance analysis of ASG. Conduct lethality analysis to quantify performance specifications of deployable ASG. ***FY 2010 Accomplishments:*** • Fabricated ASG Inert Pre-Qualification Units. • Performed MIL-STD-331 environmental testing. • Conducted lethality analysis.	0.050	-	-
Title: Sonar and Acoustic Impulse Device Synchronization ***Description:*** NUCLEAR PHYSICAL SECURITY The Navy's Waterside Security System (WSS) has a requirement to have multiple sonar sensors operate in confined areas simultaneously. These numerous collocated sonar sensors can lead to interference, thus reducing efficiency. There is a requirement to have a dynamic device control the timing of each sonar transmission. A current device is in its final stage of development and will be deployed in early FY 10. The objective of this effort is to adapt the current synchronization system to include a way to dynamically control the transmission of all acoustic devices that can interfere. These include the WQX tracking sonar, expeditionary acoustic sensors and broadband diver interdiction impulse devices given any geometrical setup. ***FY 2010 Accomplishments:*** • Developed an automated system to control the transmission timing of acoustice devices to mitigate interference in a dynamic environment • Integrated the automatic system into an operational WSS site. The contractor shall gather the system and timing information from the site for analysis. ***FY 2011 Plans:*** • Analyze data from the operational site to determine the effectiveness of the system at reducing acoustic interference.	0.136	0.197	0.192

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Produce a test report that documents the results of the analysis. ***FY 2012 Plans:*** - Complete sensitivity study for detection vice FAR - Complete weighted voting scheme - Rebuilt passive replica portion of algorithm			
Title: Probability of Kill of Security Boat-Mounted Weapons Against Small Boat Attacks ***Description:*** NUCLEAR PHYSICAL SECURITY Analysis of the weapons and tactics currently deployed against prescribed waterborne surface threats in an effort to substantiate the effectiveness of employed weapons and tactics in the waterside security arsenal. This effort will utilize both live-fire tests and modeling & simulation to accomplish the data set. ***FY 2010 Accomplishments:*** • Developed postulated threat picture and test scenarios • Conducted Live-Fire Testing. ***FY 2011 Plans:*** • Input Live-Fire Test results into Weapons Effectiveness Model. • Perform Weapons Effectiveness Analysis. • Determine Probability of Kill results in final report. • Update various modeling & simulation data libraries.	0.288	0.295	-
Title: Advanced Security Container Device ***Description:*** NUCLEAR PHYSICAL SECURITY This project will provide breach detection for munitions transport and storage with low nuisance alarms; robust system design, low cost, and trenching detection. ***FY 2010 Accomplishments:*** - Conducted Feasibility Test at Port Hueneme - Completed HERO Testing March 2010 Indicating Zero Standoff All Munitions - Developed Interface between ACSD and 802.15.4 Mesh Radio Network - Conducted Detection Optimization Tests - Ongoing	0.180	0.197	0.192

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Developed 2nd Generation ACSD LRIP Model ***FY 2011 Plans:*** • Develop and evaluate prototype systems. • Integrate candidate technologies into BV software. • Evaluate operation of integrate prototype systems with SSBN. ***FY 2012 Plans:*** - Test Bed Concept Demonstration Report - Obtain ACSD System HERO Certification - Receive Five 2nd Generation ACSDs at Port H and Assess - Conduct Long Term OT at AA&E Site Finalize System Architecture			
Title: Handheld TDS Terahertz (THz) Spectrometer ***Description:*** COUNTERING NUCLEAR THREATS This effort is to develop and demonstrate a handheld time domain THz spectrometer for detecting explosives with a non-contact distance of 20-30cm. Current Trace detectors require consumables to swipe the interrogation surface and a radiological program since most contain Nickel 63 sources. THz spectrometers would reduce the need for consumables and remove the overhead costs for radiological support. Supporting requirement documentation includes JUONS CC-0255, IEDD ICD, IUBIP ICD, Portable Chemical, Biological, Radiation, Nuclear Explosive (CBRNE)/Weapons of Mass Destruction Detector - Navy Urgent Operational Needs Statement, IBDSS CDD, Joint Service Explosive Ordnance Disposal (JSEOD) ICD, CBRNE Sense ICD ***FY 2010 Accomplishments:*** • Began database development on laboratory instrument • Conducted Design Review for Ruggedized Field prototype • Began development of field systems algorithms • Refinement of optics ***FY 2011 Plans:*** • Package circuit boards and optics for handheld size spectrometer • Design the GUI • Deliver three field prototypes March 2011	0.900	0.246	-
Title: Educational and Non-Profit Outreach	0.750	0.739	1.151

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: COUNTERING NUCLEAR THREATS This project is intended to enhance and strengthen research and development (R&D) capabilities in the areas of materials safeguards and security risk analysis, next generation detectors and monitors, and material accountability, inventory and tracking. Additionally, a task will conduct and evaluate rare event categorization. Specifically catastrophic terrorist events, including weapons of mass destruction or other high-profile attacks where there is sparse (or no) historical record from which to develop predictive models based on past statistics. ***FY 2010 Accomplishments:*** • Developed specifications, statement of work, and award contract to develop a methodology and performance metrics for material accountability, inventory, and tracking. • Developed specifications and statement of work to complete a nuclear security risk assessment. • Developed specifications and statement of work to assess next generation detectors and monitors. ***FY 2011 Plans:*** • Conduct and evaluate rare event categorization. Specifically catastrophic terriorist events, including weapons of mass destruction or other high-profile attacks where there is sparse (or no) historical record from which to develop predictive models based on past statistics. • Analyze nuclear security risk and develop performance-based risk assessment decision methodologies. • Analyze data for next generation detection and monitoring capabilities and determine the effectiveness of the use of solid state components, arrays, and alternative materials. ***FY 2012 Plans:*** • Refine rare event categorization. Specifically catastrophic terriorist events, including weapons of mass destruction or other high-profile attacks where there is sparse (or no) historical record from which to develop predictive models based on past statistics. • Refine nuclear security risk and develop performance-based risk assessment decision methodologies. • Refine data for next generation detection and monitoring capabilities and determine the effectiveness of the use of solid state components, arrays, and alternative materials.			
Title: Lighting Kit, Motion Detector ***Description:*** CONVENTIONAL PHYSICAL SECURITY	2.000	1.969	2.672

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
LKMD is a tactical, unmanned, simple, compact, modular, sensor-based early warning system that provides a programmable response set of illumination and sound, resulting in increased operational reaction time for individuals, teams, squads, or platoons. LKMD may be used as a tactical, stand-alone system or as a supplemental device for use with other security systems or missions. LKMD is designed to provide early detection and warning in order to enhance force effectiveness and increase situational awareness during all types of combat operations or missions ranging from small scale contingencies and Military Operations in Urban Terrain up to high intensity combat. An April 2008 Capability Production Document (CPD) supports this requirement. ***FY 2010 Accomplishments:*** • Completed Increment 1 fielding to first unit(s) planned for 4QFY10. • Developed the Increment 2 draft Capability Development Document (CDD) in progress. • Conducted Increment 2 Materiel Development Decision (MDD) to enter the acquisition cycle at Pre-Milestone B. • Performed Market Research and prepare Market Investigation Report. • Prepared draft Preliminary System Specification, Systems Engineering Plan (SEP), Analysis of Alternatives (AoA), Technology Development Strategy (TDS), Test and Evaluation Strategy, Acquisition Strategy, and Acquisition Plan. ***FY 2011 Plans:*** • Prepare Request for Proposal (RFP) and award up to three prototype development contracts. • Begin prototype manufacture. • Prepare draft Information Support Plan (ISP), Application for Spectrum Support, and Initial Product Support Strategy. ***FY 2012 Plans:*** - Prepare for procurement and deployment			
Title: Mobile Detection Assessment Response Systems ***Description:*** CONVENTIONAL PHYSICAL SECURITY MDARS provides the DOD and other agencies with a mobile, robotic security vehicle having the ability to conduct semi-autonomous random patrol and surveillance activities. It is designed to operate under various exterior environmental conditions at critical government installations. MDARS is currently being restructured by the Army. ***FY 2010 Accomplishments:*** • Completed MDARS Increment 1 by demonstrating all CPD Threshold requirements and some Objective Requirements. • Completed the initial outline and briefing for restructuring the MDARS program; briefed Joint Program Manager Guardian in Nov 09.	0.400	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Participated in Joint Force Protection Advanced Security System (JFPASS) Operational Demonstration 1 (Oct 09) at Eglin Air Force Base, FL as the Quick Reaction Force Team Element for initial incident contact. • Completed 30-day Endurance Test at HWAD (Sep 09). • Completed the Office of the Provost Marshall General (Army Staff)- requested operational data collection evolution at Hawthorne Weapons Army Depot to support a CAA CBA validation (Jan 10).			
Title: Tactical Video Surveillance System ***Description:*** CONVENTIONAL PHYSICAL SECURITY TVSS will be a tactical, lightweight, compact, modular, wireless video surveillance and warning system with motion detection activation and enhanced assessment capability. The major objective for TVSS is to improve the local area security and protection of tactical units and soldiers with quick set-up, high reliability, and operator selected mission dependent configurations. This program is interoperable with unattended ground sensors. It remains under review by the Army's Maneuver Support Center of Excellence as the Capability Development Document (CDD) is being developed. ***FY 2010 Accomplishments:*** • Conducted Market Research in Conjunction with Technical Support Working Group for Development of the Ultra High Resolution Surveillance System. • Coordinated with Maneuver Support Center of Excellence (MSCoE) for input during generation of the draft CDD. • Conducted a Materiel Development Decision for guidance to enter the acquisition cycle at Pre-Milestone B. • Began development of draft acquisition documentation to support a FY11 Milestone B Engineering and Manufacturing Development decision. Documentation includes Acquisition Program Baseline, System Performance Specification, Systems Engineering Plan (SEP), Analysis of Alternatives (AoA), Technology Development Strategy (TDS), Test and Evaluation Master Plan, Initial Product Support Strategy, and Acquisition Strategy. • Performed Market Research and prepare Market Investigation Report. • Conducted Tri-fusion Demonstration in conjunction with Space and Naval Warfare (SPAWAR) Systems Center-Pacific. ***FY 2011 Plans:*** • Receive Department of the Army approval of CDD. • Complete Milestone B acquisition documentation including preparation of an Acquisition Plan. • Conduct a Milestone B In-Process Review and receive Milestone Decision Authority approval to enter the Engineering and Manufacturing Development (EMD) phase.	2.080	1.969	1.919

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Prepare Request for Proposal for EMD contract. ***FY 2012 Plans:*** - Prepare for procurement and deployment			
Title: Integrated Ground Security Surveillance & Response Capability ***Description:*** CONVENTIONAL PHYSICAL SECURITY This is a new effort that will provide commanders a near real-time decision support system to counter threats in the field. It supports a Joint requirement for data integration, automation, and fusion. It is a follow on to the successful JFASS JCTD project partly funded by the PSEAG. The capability will use sensor data to provide actionable, multi-directional automated data for rapid responses and situational awareness. ***FY 2010 Accomplishments:*** • Conducted Market Research through a Request for Information (RFI) and assessment of the RFI responses (solicited both commercial/government “fusion” solutions) • Prepared for a Materiel Development Decision (MDD) • Initiated Milestone (MS) B documentation development ***FY 2011 Plans:*** • Obtain MDD approval • Determine competitive prototyping sources (commercial/Government) based on results of RFI • Select competitive prototyping sources • Conduct competitive prototyping • Complete a Preliminary Design Review • Complete MS B preparation ***FY 2012 Plans:*** - Integrate legacy and future sensors with data fusion	0.846	1.477	2.398
Title: Joint Force Protection Advanced Security System ***Description:*** CONVENTIONAL PHYSICAL SECURITY The purpose of the JFPASS JCTD is to demonstrate the value of linking disparate Force Protection: Physical Security, Chemical Biological Radiological and Nuclear (CBRN), and Incident Management systems into an integrated system of systems that	3.000	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
reduces risks, optimizes the use of manpower, and increases the commander's overall level of situational awareness. It enables the fusion of Force Protection capabilities by integrating and automating current and emerging systems, sensors, tools and processes so that operators can focus on responses. Requirements for this capability were derived from the IUBIP CBA and Interoperability ICD. ***FY 2010 Accomplishments:*** • Held first operational demonstration (OD-1) in Sep/Oct 09. • Distributed Interim Operational Utility Assessment (OUA) report highlighting operational value of integration, automation, and fusion of disparate force protection technologies into a system of systems. • Conducted second technical demonstration (TD-1) and second operational demonstration (OD-2) at Spangdahlem AFB, GE in Jul/Aug 10. • Transitioned appropriate Joint Force Protection technologies/architectures/lessons learned to several programs of record and other force protection initiatives/efforts.			
Title: Weapons Tracking Seal ***Description:*** CONVENTIONAL PHYSICAL SECURITY This project's objective is to leverage approved Department of Homeland Security (DHS) global communications and tracking tag for transmitting security alert information from ISO shipping containers into an automated DoD System. DoD benefits to using this technology are: improved situational awareness, DoD targeting and interdiction capability, leverages existing com networks, and interoperable in intermodal transport. Supporting Requirement Documents: Tier 1 -2.1.1.1 IBDSS CDD FEB05, Capabilities Detection, Access Control, Delay/Denial. DoD 5200.08-R, 09APR07, Security of controlled inventory, DTR 4500.9-R. ***FY 2010 Accomplishments:*** • Conducted Initial Testing at NBVC Rail Car Test Bed; Install 10 Systems on Railcars at Operational AA&E Site • Established Wireless Communications Architecture between Storage Yard and Command Center • Performed OT&E • Commenced CONOPS Development ***FY 2011 Plans:*** • Complete Prototype Tests • Design Mods/Reconcile w/CONOPS • Field Units/System Demonstration ***FY 2012 Plans:***	0.260	0.295	0.384

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Low rate initial production - Develop procurement packages			
Title: Physical Security of Storage Magazines ***Description:*** CONVENTIONAL PHYSICAL SECURITY At the request of the Under Secretary of Defense (Intelligence) (OUSD (I)), the DoD Lock Program conducted tests on existing magazine door designs. Results indicate many doors provide less than 10 minutes of resistance against attacks using commercially available tools. Therefore, security for current storage magazines must rely heavily on manpower to keep adversaries from gaining access to sensitive assets. The purpose of this project is to develop design criteria, for new construction and to retrofit existing structures, to provide 10 minutes of forced entry protection. Supporting Requirement Documents: Tier 1 - 2.1.1.1 IUBIP ICD JAN08, Capability Gap Priority 19, DoDD 5100.76M. ***FY 2010 Accomplishments:*** • Conducted Explosive and Ballistic Tests on Guam Door Design • Completed Prototype Thermal Relocker Design and Tests ***FY 2011 Plans:*** • Provide Acquisition Field Support	0.170	0.197	-
Title: Shipboard Security Systems ***Description:*** CONVENTIONAL PHYSICAL SECURITY This project identifies security, operational, and functional requirements for shipboard security containers to ensure these containers meet storage, shock, vibration and mounting requirements. In coordination with the Chief of Naval Operations, NAVSEA, and Shipbuilders, tasks for this project include the development of GSA Approved shipboard security containers and mounting systems; federal specifications for testing equipment for usage in shipboard environments; and updates to policy requirements to mitigate current security vulnerabilities and standardize protection of classified information aboard ship. Supporting Requirement Documents: Tier 1 – 2.1.2.2 OPNAVINST 5530.13C, September 2003. DoD Directives and Policy: Tier 1 – 2.1.4 DoD Directive 3224.3, Federal Specification FF-L-2740, SECNAV M-5510.36 Chapter 10. ***FY 2010 Accomplishments:*** • Updated DoD and Navy policy with container pedestal system security containers requirements	0.235	0.236	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Finalized and approved revision to Federal Specification AA-F-358H, Filing Cabinet, Legal and Letter Size, Uninsulated, Security, authorizing pedestal design • Manufactured and tested Phase III security container equipment for storing classified laptops • Transitioned shipboard security container pedestal system to field and acquisition sponsor ***FY 2011 Plans:*** • Transition Phase III security container equipment for storing classified laptops to field and acquisition sponsor • Prepare Final Report • Commence development of Class 9 Lightweight Security Container			
Title: Shore Line Interdiction ***Description:*** CONVENTIONAL PHYSICAL SECURITY This project will provide a detection barrier where fixed fence lines are not allowed. It is designed to detect and discriminate intruders at the land-water interface and operates in and around complex shoreline/littoral environments. Supporting Requirements Documents: DoD INST 2000.16, 5200.08, 5200.8R, OPNAV INST 5530.14C Ch2, Presidential DD 63, CIP-011-1 Sabotage Reporting, AT/FP Ashore Near -Term Requirements, NATTCO ***FY 2010 Accomplishments:*** • Built and installed 10 pole expanded system at Redstone Arsenal (RSA) • Conducted initial demonstration at RSA ***FY 2011 Plans:*** • Install 1st prototype system at Anniston Army Depot • Conduct Field testing ***FY 2012 Plans:*** - Install 2nd prototype system at Whidbey Island, WA	1.575	1.969	2.398
Title: Target Echo Analysis ***Description:*** CONVENTIONAL PHYSICAL SECURITY Support fixed and expeditionary based PORs that will field sub-surface threat detection, classification, localization and engagement of human and UUV based force protection threats. The Sonar Augmentation program has been working on utilizing	0.271	0.295	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
both passive and active clues to better classify targets of interest from an active swimmer detection system. Currently the project is focused on feature extraction from the active portion of known data sets containing both real and false targets. ***FY 2010 Accomplishments:*** • Created Software routines to extract complex beam formed data for contacts identified by active sonar • Extracted 6 parameters and an algorithm developed from a single training data set • Worked on analysis of independent data ***FY 2011 Plans:*** - Incorporate individual metrics (scinitillation, density, acoustic hardness, positional jitter) - Produce quantitative data - Final report			
Title: Integrated Defense Command and Control Common Operational Picture ***Description:*** CONVENTIONAL PHYSICAL SECURITY IDC2COP is a C2 system that is being developed to support the United States Air Force (USAF) Security Forces mission at garrison locations and in expeditionary environments. The primary mission support area includes law enforcement, force protection, and emergency management. IDC2COP provides automated incident management, base defense planning, and response force collaboration capabilities that are linked with defined quick response checklists. This project is being coordinated in its early stages with two other PSEAG initiatives: JFPASS and IGSSR-C. ***FY 2010 Accomplishments:*** • Installed wireless network equipment at Spangdahlem and Wright Patterson Air Force Base (WPAFB) • Obtained Interim Authority to Test (IATT) and conducted testing at WPAFB • Developed interfaces for Air Force Security annunciators and integration with external legacy systems • Participated in Operational Demonstration-2 at Spangdahlem AFB in Aug 10 ***FY 2011 Plans:*** • Continuous testing and development at a single base • Software development • Transition to procurement	3.160	2.954	-
Title: Commercial Off-the-Shelf (COTS) Qualification ***Description:*** CONVENTIONAL PHYSICAL SECURITY	0.515	0.689	0.767

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The COTS Qualification Program (series of projects) was initiated to analyze, select, test and evaluate new or improved Intrusion Detection Equipment (IDE) that will meet or exceed the requirements identified in the Integrated Base Defense Security System CDD. The equipment will ultimately replace or augment existing similar capability with improved systems in intrusion detection and assessment capability for deployment in perimeter, flight line, access control, interior controlled facility, or avenue of approach applications. Test assessment reports are available for use to all federal agencies. ***FY 2010 Accomplishments:*** • Completed Cold Weather Endurance Testing of Buried Cable Sensors. • Completed Qualification Test & Evaluation (QT&E) of Video Management Systems. • Completed QT&E of Intrinsically Safe Interior Sensors. • Completed QT&E of New Fence Sensors. ***FY 2011 Plans:*** • Continue ongoing QT&E based on identified capability gaps. ***FY 2012 Plans:*** • Continue ongoing QT&E based on identified capability gaps.			
Title: Automated Installation Entry (AIE) Test Bed ***Description:*** CONVENTIONAL PHYSICAL SECURITY The Department of Defense (DoD) requires an interoperable, inter-Service capability at multiple DoD military installations. The purpose for AIE is to test and evaluate potential solutions to detect unauthorized personnel attempting to gain access to a DOD installation through screening of personal identification credentials at the installation entry control points. AIE will provide a DOD automated entry control capability that links to federal authoritative database and include biometrics. Adding AIE to the test bed at Site C-3 will allow the services to compare and contrast other services solutions and provide a location for each service to test upgrades before fielding. ***FY 2010 Accomplishments:*** • Installed significant AIE infrastructure at Eglin AFB Site C-3 test facility. • Awarded an AIE Increment II contract by the US Army. • Participated in Defense Installation Access Control (DIAC) Concept Demonstration ***FY 2011 Plans:***	0.800	0.788	1.535

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Determine DIAC lessons learned from demonstration ***FY 2012 Plans:*** • Implement solutions to lessons learned from concept demonstration			
Title: Defense Installation Access Control (DIAC) ***Description:*** CONVENTIONAL PHYSICAL SECURITY The Department of Defense (DoD) requires an interoperable, inter-Service capability at multiple DoD military installations. A series of concept demonstrations and table top exercises (TTX) will be conducted to verify the ability of the local Physical Access Control System (PACS) to electronically exchange an individual's access authorization data with an authoritative source system across available communications network using commercial/Government middleware and/or web services architecture. ***FY 2010 Accomplishments:*** • Conducted TTX in May to isolate issues in preparation for June 2010 Concept Demo I • Conducted DIAC Concept Demonstration I in June 2010 at three key locations: Washington Navy Yard, SPAWAR Charleston, SC and Eglin's Site C-3 to test and evaluate two middleware solutions and reliability/configuration of transferred data message sets ***FY 2011 Plans:*** • Conduct Concept Demo II • Prepare final assessments ***FY 2012 Plans:*** - Three (100 Day) spiral demonstrations to achieve Enterprise Svc Arch - Follow on technical demo of Behavioral Analysis technologies Ft. Hood - Checklist development of behavioral analysis patterns - Biometrics demonstration based on PDM II study from FY 11 - Implement solution for Continuous Vetting/Discover from FY 11 study	2.755	3.281	4.796
Title: Security Engineering Integration Working Group ***Description:*** CONVENTIONAL PHYSICAL SECURITY	1.836	1.969	1.919

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The PSEAG is focused on harmonizing DoD-wide capabilities and requirements while assisting to find solutions that are interoperable, interchangeable and meet a series of PSEAG-established standards fitting into a physical security architecture. The continuous efforts of the Security Engineering Integration Working Group (SEIWG) meet this Department-wide objective. ***FY 2010 Accomplishments:*** • Participated in Defense Installation Access Control activities • Developed Use Cases for new Command and Control Display Equipment (CCDE) Interface Control Document (ICD) • Added Access Control details to the Holistic Joint Force Protection Architecture ***FY 2011 Plans:*** • Support DIAC activities and update ICD based on lessons learned • Complete and publish JFPASS JCTD Operational Demonstration-2 architecture • Provide Architecture and ICD SMEs as required to the services • Publish update to SEIWG ICD-0101A with lessons learned from JFPASS JCTD ***FY 2012 Plans:*** - Continue to support JFPASS Transition IPT - Support DIAC and update JGS ICD as applicable			
Title: PSEAG Program RDT&E Integration ***Description:*** CONVENTIONAL PHYSICAL SECURITY ***FY 2010 Accomplishments:*** • Assured Technical Advisor support to assess technologies, prioritize needs, and preclude duplication across all PSEAG initiatives • Pursued “reach out” initiatives to other RDT&E-like DoD organizations, to include Joint Non-Lethal Weapons Directorate • Coordinated and facilitated all programmatic efforts associated with entire program, including administration of entire Program Element, conduct of program management and financial reviews, and information sharing meetings. • Conducted a seven month review of the current Requirements Process that forms the basis of the PSEAG’s work efforts: results to be presented in FY 11 • Maintained internal DoD PSEAG Portal to facilitate sharing information ***FY 2011 Plans:*** • Continue Technical Advisor Support to assess technologies, prioritize needs, and preclude duplication across all PSEAG initiatives	3.647	1.654	7.782

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Pursue “reach out” initiatives to other RDT&E-like DoD organizations, to Office of Navy Research, Defense Advanced Research Projects Agency, Air Force Research Laboratory and Army Research Laboratory • Coordinate and facilitate all programmatic efforts associated with entire program, including administration of entire Program Element, conduct of programmatic and financial reviews, program management reviews and information sharing meetings and portal maintenance. • Brief results and make recommendations leading to a new approach for capability/requirements inputs for physical security needs • Continue to maintain DoD PSEAG Portal and develop public website ***FY 2012 Plans:*** • Continue Technical Advisor Support to assess technologies, prioritize needs, and preclude duplication across all PSEAG initiatives • Pursue “reach out” initiatives to other RDT&E-like DoD organizations, to Office of Navy Research, Defense Advanced Research Projects Agency, Air Force Research Laboratory and Army Research Laboratory • Coordinate and facilitate all programmatic efforts associated with entire program, including administration of entire Program Element, conduct of programmatic and financial reviews, program management reviews and information sharing meetings and portal maintenance. • Brief results and make recommendations leading to a new approach for capability/requirements inputs for physical security needs • Continue to maintain DoD PSEAG Portal and sustain public website			
Title: Light-weight Armor .50 cal Test ***Description:*** NUCLEAR PHYSICAL SECURITY This new project will analyze the theoretical problem, develop a test framework, and evaluate a maritime specific material solution to withstand a ballistic capability from at a minimum a .50 crew served weapon. ***FY 2010 Accomplishments:*** - Developed test framework - Evaluated a maritime material solution ***FY 2011 Plans:*** - Develop test framework	0.180	0.197	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Evaluate a maritime material solution			
Title: DTRA Modeling and Simulation Center of Excellence ***Description:*** NUCLEAR PHYSICAL SECURITY This new project will create a Modeling and Simulation Center of Excellence where computer generated models and simulations can be performed. Models and simulations will incorporate current intelligence capabilities analysis information, latest and previous Mighty Guardian exercise inputs, and physical security system upgrades at each Service CONUS / OCONUS installation. ***FY 2010 Accomplishments:*** - Developed a Modeling and Simulation Center of Excellence ***FY 2011 Plans:*** - Sustained a Modeling and Simulation Center of Excellence ***FY 2012 Plans:*** - Sustain and expand a Modeling and Simulation Center of Excellence	0.627	0.394	0.384
Title: Countering Nuclear Threats ***Description:*** This project addresses capability gaps by examining DoD CNT operation, ranging from steady state (Prevention) through surge (Protection), to consequence management and forensics/attribution (Response). The project will produce recommendations for a balanced and robust DoD CNT portfolio of capabilities, capacities, infrastructure, research and development programs, and operational concepts. ***FY 2010 Accomplishments:*** - Developed System-wide Objectives and Evaluation Metrics - Characterized CNT Scenarios and Response Options - Identified Strategic Capability Areas ***FY 2011 Plans:*** - Refine System Evaluation Metrics - Refine Potential Response Options - Develop Strategies to close gaps ***FY 2012 Plans:***	0.900	2.954	4.317

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Refine Strategies to close gaps			
Title: Common Operating Picture Integration ***Description:*** CONVENTIONAL PHYSICAL SECURITY The purpose of this project is to provide a common user interface (UI) environment across the Department of Defense (DoD)'s various Command and Control (C2) projects with systems that respond to physical security/force protection requirements. ***FY 2010 Accomplishments:*** - Conducted proof of concept ***FY 2011 Plans:*** - Develop report on Technical Details of Existing CCDE Systems - Develop report on software frameworks and tools for compatibility studies (more on this in a minute) - Create DoD Architecture Framework Views - Create Software Requirements Document - Create technology demonstrator / proof of concept showing two CCDE simulators merged into one UI via a prototype JIGSAW server ***FY 2012 Plans:*** - Provide a common User Interface (UI) environment across the Department of Defense (DoD)'s various Command and Control Display Equipment (CCDE) projects. - Create a "UI abstraction layer" that will allow for the fusion of multiple CCDE systems into one coherent interface. - Abstract the UI from the core functionality of the CCDE systems to reduce costs and provide additional functionality.	0.300	0.788	0.863
Title: Long Range TeraHertz (THz) Imaging Radar ***Description:*** CONVENTIONAL PHYSICAL SECURITY This project's objective is to develop a system capable of detecting person-borne IEDs (PBIED) at standoff distances of 25 meters or more. The system uses a 670 GHz to produce a 3D image to detect energetic material, IEDS and/or IED components at 25-100 meters standoff distance within five seconds of identifying suspect. Supporting requirement documentation includes JUONS CC-0315, Integrated Base Defense Security System (IBDSS) CDD, the Improvised Explosive Device Defeat (IEDD) ICD and the Integrated Unit Base Installation Protection (IUBIP) ICD. ***FY 2010 Accomplishments:***	1.500	1.969	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Completed upgraded laboratory prototype incorporating a 25 meter radar • Received a 1 meter antenna • Built laboratory prototype at JPL with simulated targets to prove ~ five seconds at a 25 meter standoff distance • Began Phase IV development to produce a field prototype ***FY 2011 Plans:*** • Develop moderately rugged field prototype with scan time of 1 second • Test and prepare report			
Title: Strategic Plans and Requirements ***Description:*** The primary purpose of this project is to develop a PSEAG and Navy Strategic Plan and to review the current PSEAG requirements process, both at current policy and execution level ***FY 2010 Accomplishments:*** - Proposed a study plan for approval - Reviewed the current PSEAG business model - Interviewed key personnel in key organizations - Proposed a ten-year Strategic Plan for approval - Published the approved plan reflecting a newly approved vision, mission, goals, objectives and associated metrics. ***FY 2011 Plans:*** - Deliver final Navy strategic plan briefing/report	0.535	0.182	-
Accomplishments/Planned Programs Subtotals	34.187	32.132	36.798

	FY 2010	FY 2011
Congressional Add: Under Vehicle Inspection System (UVIS) ***FY 2010 Accomplishments:*** • Continued to install at selected installations (MacDill AFB, New York Air National Guard, and Nellis AFB) to gain lessons learned to input into future technology improvements • Pursued LED Light Source utilization rather than halogen sources • Improved environmental shielding	2.300	-
Congressional Add: Roadrunner Convoy Security Unmanned ***FY 2010 Accomplishments:*** • Initiated concept flight testing activities • Initiated requirements generation	4.560	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

	FY 2010	FY 2011
• Complete requirements generation • Begin system design and integration • Convoy Security UAS TTP development • Demonstration and evaluation		
Congressional Add: Pacific Data ***FY 2010 Accomplishments:*** • Support the establishment of a Technology Outreach center in conjunction with the Hawaii National Guard. • Man the Technology Outreach Center with technical personnel to support experimentation with various physical security and unmanned systems technologies. Develop a database for the collection and analysis of end-user feedback. • Provide analysis of end-user feedback. • Convert of experimentation reports and technical documentation using the S1000D standard and provide analysis of the conversion for use on the knowledge base.	2.000	-
Congressional Add: Advanced Detection of Special Nuclear Materials ***FY 2010 Accomplishments:*** • Built a first prototype of high pressure recovery system • Constructed LKr detectors • Reviewed/Developed, as appropriate, Cooling systems • Reviewed/built gas purification system	1.939	-
Congressional Add: Handheld FDS Terahertz (THz) Spectrometer ***FY 2010 Accomplishments:*** • Conducted Critical Design Review • Built the 783nm butterfly packaged laser • Completed component designs • Database development	0.050	-
Congressional Adds Subtotals	10.849	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	**PROJECT** P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

E. Performance Metrics

The program performance metrics are established/approved through the DoD Physical Security Equipment Action Group (PSEAG) and the Security Policy Verification Committee (SPVC). The cost, schedule and technical progress is reviewed at quarterly PSEAG and SPVC meetings. Performance variances are addressed and corrective action(s) is(are) implemented as necessary.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
US Army Force Protection/ Tactical Security Equipment (FP/TSE)	MIPR	PM-FPS (USA):Ft. Belvoir, Virginia	11.425	5.797	Mar 2011	3.523	Mar 2012	-		3.523	Continuing	Continuing	
US Air Force Force Protection/ Tactical Security Equipment (FP/TSE)	MIPR	642nd ELSS (USAF):Hanscom AFB, Massachusetts	11.625	5.510	Feb 2011	6.400	Feb 2012	-		6.400	Continuing	Continuing	
SPAWAR Force Protection/ Tactical Security (FP/TSE)	MIPR	SPAWAR System Center:San Diego, CA	3.860	0.500	Feb 2011	2.708	Feb 2012	-		2.708	Continuing	Continuing	
US Army Robotic Security Systems Integration (RSSI)	MIPR	PM-FPS (USA:Ft. Belvoir, Virginia	1.750	0.700	Dec 2010	2.000	Dec 2011	-		2.000	Continuing	Continuing	
US Air Force Robotic Security Systems Integration (RSSI)	MIPR	AFRL:Tyndall AFB, FL	5.030	1.000	Feb 2011	5.000	Feb 2012	-		5.000	Continuing	Continuing	
Waterside Security	MIPR	NUWC:Newport, Rhode Island	4.340	1.025	Dec 2010	2.708	Dec 2011	-		2.708	Continuing	Continuing	
Explosive Detection Equipment (EDE)	MIPR	NAVEODTECHDIV:Indian Head, Maryland	4.000	1.400	Nov 2010	2.001	Nov 2011	-		2.001	Continuing	Continuing	
Locks, safes, and Vaults	MIPR	NFESC:Port Hueneme, California	3.640	1.745	Jan 2011	2.708	Jan 2012	-		2.708	Continuing	Continuing	
DTRA Nuclear Weapon Physical Security Programs	MIPR	Defense Threat Reduction Agency (DTRA):Ft. Belvoir, Virginia	21.714	9.500	Dec 2010	9.750	Dec 2011	-		9.750	Continuing	Continuing	
		Subtotal	67.384	27.177		36.798		-		36.798			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
COTS Testing	MIPR	642d ELSS:Hanscom AFB, MA	2.450	0.500	Mar 2011	-		-		-	Continuing	Continuing	
Explosive Detection Equipment (EDE)	MIPR	NAVEODTECHDIV:Indian Head, MD	2.250	1.000	Feb 2011	-		-		-	Continuing	Continuing	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Robotic COTS Testing	MIPR	PM-FPS:Ft. Belvoir, VA	2.000	0.500	Feb 2011	-		-		-	Continuing	Continuing	
		Subtotal	6.700	2.000		-		-		-			

Management Services ($ in Millions)

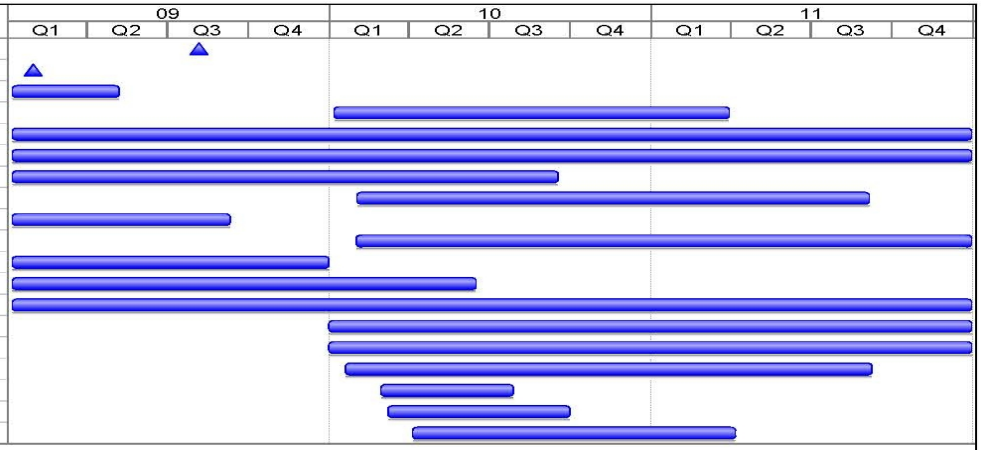
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
US Army Force Protection/ Tactical Security Equipment (FP/TSE)	MIPR	PM-FPS:Ft. Belvoir, VA	1.800	0.700	Jan 2011	-		-		-	Continuing	Continuing	
Force Protection/Tactical Security Equipment	MIPR	642d ELSS:Hanscom, AFB	1.950	0.600	Jan 2011	-		-		-	Continuing	Continuing	
SPAWAR Force Protection/ Tactical Security Equipment (FP/TSE)	MIPR	SPAWAR System Center:San Diego, CA	0.600	0.200	Feb 2011	-		-		-	Continuing	Continuing	
Robotic Security Systems Integration (RSSI)	MIPR	PM-FPS:Ft. Belvoir, VA	1.158	0.300	Dec 2010	-		-		-	Continuing	Continuing	
Waterside Security	MIPR	NAVSEA:Port Hueneme, CA	1.100	0.300	Jan 2011	-		-		-	Continuing	Continuing	
Locks, Seals, and Vaults	MIPR	NFESC:Port Hueneme, CA	0.810	0.355	Mar 2011	-		-		-	Continuing	Continuing	
Nuclear Weapons Physical Security	MIPR	SPAWAR:Charleston, SC	1.000	0.500	Jan 2011	-		-		-	Continuing	Continuing	
		Subtotal	8.418	2.955		-		-		-			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	82.502	32.132		36.798		-		36.798			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	**PROJECT** P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

ID	Task Name
1	Execute FPED VII
2	Demonstrate NROWS Capability to detect and track multiple targets
3	Demonstrate NROWS detecting and tracking multiple targets under various scenerios
4	Complete LKMD Product Qualification Testing
5	Integrate remote weapon systems with robotic platforms. (IROWS)
6	Leverage WSS efforts in support of SSBNs.
7	Limited Production of Optimized door within the Magazine Access Denial Program.
8	Weapons Tracking Seal system integration and test/evaluation
9	Design Handheld THz Spectrometer.
10	THz technologies system engeering and software development
11	Fully integrate biometrics with the ILD.
12	Model all nuclear weapons facilities using the AVERT Risk Management Tool.
13	Continue testing and evaluation of COTS products
14	Automated Installation Entry (AIE) Testbed
15	Expanded Situational Awareness Capabilities
16	JFPASS site setups, execution, and risk assessment
17	IDC2COP Network Enhancement and Interoperability Assessment
18	DIAC Proof of Concept and Evaluation of Systems Capabilities
19	TVSS CDD, Tri-Fusion Demo, and Milestone B Documentation



Page 1

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	**PROJECT** P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
THZ technologies system engineering and software development	1	2010	4	2011
Weapons Tracking Seal system integration and test/evaluation	1	2010	4	2011
Design Handheld THz Spectrometer	1	2010	4	2010
Continue testing and evaluation of COTS products	1	2010	4	2016
Automated Installation Entry (AIE) Testbed	1	2010	4	2011
Expanded Situational Awareness Capabilities	1	2010	4	2011
IDC2COP Network Enhancement and Interoperability Assessment	2	2010	3	2011
DIAC Proof of Concept and Evaluation of Systems Capabilities	2	2010	4	2010
Limited Production of Optimized door within the Magazine Access Denial program	1	2010	3	2010
Leverage WSS efforts in support of SSBNs	1	2010	4	2011
Execute FPED VII	3	2010	3	2010
LKMD Full Rate Production Decision (Milestone C)	1	2010	3	2010
JFPASS site setups, execution, and risk assessment	2	2010	3	2011
TVSS CDD, Tri-Fusion Demo, and Milestone B Documentation	2	2010	2	2011

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603527D8Z: *Retract Larch*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	20.469	21.592	21.040	-	21.040	21.999	22.353	22.620	23.070	Continuing	Continuing
P527: *Retract Larch*	20.469	21.592	21.040	-	21.040	21.999	22.353	22.620	23.070	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	21.542	21.592	22.191	-	22.191
Current President's Budget	20.469	21.592	21.040	-	21.040
Total Adjustments	-1.073	-	-1.151	-	-1.151
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-1.073	-	-0.334	-	-0.334
• Defense Efficiency - Contractor Staff Support	-	-	-0.234	-	-0.234
• Defense Efficiency - Report, Studies, Boards and Commissions	-	-	-0.554	-	-0.554
• Economic Assumptions	-	-	-0.029	-	-0.029

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Retarct Larch	20.469	21.592	21.040
Description: Not applicable. Information Classified			
FY 2010 Accomplishments:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603527D8Z: *Retract Larch*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Not applicable. Information Classified ***FY 2011 Plans:*** Not applicable. Information ***FY 2012 Plans:*** Not applicable. Information Classified			
Accomplishments/Planned Programs Subtotals	20.469	21.592	21.040

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

Not Applicable. Classified

F. Performance Metrics

Not Applicable. Classified

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603600D8Z: *WALKOFF*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	-	112.142	-	112.142	104.959	101.407	101.885	103.710	Continuing	Continuing
0000: *WALKOFF*	-	-	112.142	-	112.142	104.959	101.407	101.885	103.710	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Classified.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	112.142	-	112.142
Total Adjustments	-	-	112.142	-	112.142
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Start Program	-	-	112.297	-	112.297
• Economic Assumptions	-	-	-0.155	-	-0.155

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: WALKOFF	-	-	112.142
FY 2010 Accomplishments: Not Applicable			
FY 2011 Plans: Not Applicable			
FY 2012 Plans: Classified.			
Accomplishments/Planned Programs Subtotals	-	-	112.142

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603600D8Z: *WALKOFF*

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

Classified.

F. Performance Metrics

Classified.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	14.568	9.878	11.129	-	11.129	11.218	10.665	10.364	10.940	Continuing	Continuing
P709: *Joint Robotics Program*	14.568	9.878	11.129	-	11.129	11.218	10.665	10.364	10.940	Continuing	Continuing

A. Mission Description and Budget Item Justification

(U) This Program Element (PE) was established in response to Congressional guidance to consolidate DoD robotic programs on unmanned ground systems and related robotic technologies in order to increase the focus of the robotic programs on operational requirements. Technologies in the PE support the continued development of technologies beyond Budget Activity 3 (PE 0603711D8Z) for technology transition and transformation to close warfighter requirement capability gaps. By exercising its oversight role through a technology advisory board, senior military Council and Senior Steering Group (Flag level), Joint Ground Robotics (JGRE) applies this PE to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. This PE funds efforts to overcome technology barriers in thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Collaborative Operations, Interoperability, Man-portable Unmanned Ground System Technologies, Manipulation Technologies, and Technology Transition/Transformation. This PE funds unmanned ground system technologies and supports the integration of technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedites technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Within this PE, funded projects will continue the delivery of advanced technology directed at enhancing the warfighter's capabilities identified during new concept development, operational assessments and field feedback of current unmanned systems. The technologies are generally at TRL 4 or 5 with the intent to mature them through JGRE efforts to TRL 6.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603709D8Z: *Joint Robotics Program*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	14.568	9.878	11.781	-	11.781
Current President's Budget	14.568	9.878	11.129	-	11.129
Total Adjustments	-	-	-0.652	-	-0.652
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense Efficiency Baseline Review	-	-	-0.106	-	-0.106
• Defense Efficiency - Report, Studies, Boards and Commissions	-	-	-0.296	-	-0.296
• Defense Efficiency - Contractor Staff Support	-	-	-0.234	-	-0.234
• Economic Assumptions	-	-	-0.016	-	-0.016

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P709: *Joint Robotics Program*		
Congressional Add: *Autonomous Machine Vision for Mapping and Investigation of Remote Sites*	1.600	-
Congressional Add: *Joint Robotics Training Program*	2.000	-
Congressional Add Subtotals for Project: P709	3.600	-
Congressional Add Totals for all Projects	3.600	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P709: *Joint Robotics Program*	14.568	9.878	11.129	-	11.129	11.218	10.665	10.364	10.940	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

(U) This Program Element (PE) was established in response to Congressional guidance to consolidate DOD robotic programs on unmanned ground systems and related robotic technologies in order to increase the focus of the robotic programs on operational requirements. Technologies in the PE support the continued development of technologies beyond Budget Activity 3 (PE 0603711D8Z) for technology transition and transformation to close war fighter requirement capability gaps. By exercising its oversight role through a technology advisory board, senior military Council and Senior Steering Group (Flag level), Joint Ground Robotics (JGRE) applies this PE to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. This PE funds efforts to overcome technology barriers in thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Collaborative Operations, Interoperability, Man-portable Unmanned Ground System Technologies, Manipulation Technologies, and Technology Transition/Transformation. This PE funds unmanned ground system technologies and supports the integration of technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedites technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Within this PE, funded projects will continue the delivery of advanced technology directed at enhancing the war fighter's capabilities identified during new concept development, operational assessments and field feedback of current unmanned systems. The technologies are generally at TRL 4 or 5 with the intent to mature them through JGRE efforts to TRL 6.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Autonomous & Tactical Behaviors	2.012	2.651	2.829
Description: Development of vehicle onboard intelligence and tactical behaviors for greater autonomy. These technologies will increase the war fighters' ability to accomplish military task with greater effectiveness, while simultaneously reducing their risk to exposure and harm. ***FY 2010 Accomplishments:*** 1)Autonomous Navigation for Small UGVs (ANSU) project is to increase the war fighter's capability by developing, maturing, demonstrating and transferring autonomy technologies that will significantly increase the functional capabilities of small UGV systems. Project will transition to 0604709 to continue work at a higher technology readiness level. -Demonstration of the 2nd generation sensor suite on a representative platform capable of detecting obstacles of 6" or greater at a range of 3 meters. -Delivered of Micro-LIDAR September 2010.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
2) Very Low Cost LIDAR delivered new low cost MIL ruggedized eye-safe LIDAR built based on automotive driven capabilities (smaller than the typical automotive radar unit, better than 3 cm accuracy, two axis scan, and 200 meter or better range). -Completed work to modify Micro LIDAR hardware -Modified software modules -Developed Control Software -Developed Field-Programmable Gate Array (FPGA) H/W & S/W Configuration and begin FPGA Software Integration -Began LRIP production planning. ***FY 2011 Plans:*** 1)Very Low Cost LIDAR program deliver a low-cost sensor capable of providing textured 3D range maps with automatic terrain classification that provides significant new capabilities for the war fighter. This device can be used in the automation of ground vehicles or the data can be directly used by the war fighter to improve situational awareness. -Project will produce and assemble brass board sensor -Conduct Phase 1 Testing & Evaluation -Produce and integrate prototype sensor hardware and software, validate prototype sensor -Conduct Phase II Test & Evaluation -Complete LRIP production plan. 2) Adaptive Navigation Systems will develop and demonstrate an advanced modular and adaptive inertial navigation system for small UGVs. Project was previously funded from PE 0603711D8Z . -Procure/test new Inertial Measurement Units (IMU). -Development of software for integration of alternative IMU with Heuristics-enhanced Dead-reckoning (HEDR) system. -Develop coding for real-time execution onboard HEDR computer. -Review interface protocols. -Develop and code software for implementing standard interface protocol. -Develop software for using external sensors. -Testing of alternative embedded computers. -Rewriting of existing HEDR software to run on slower, possibly non-floating point computer. -Test system. -Build 2nd HEDR system 3)Collision Prediction Utilizing Traversability Models for Dynamic Environments will develop, demonstrate, and deliver one integrated sensor system that will detect, classify, track, and predict the motion of objects from a moving vehicle. The prototypes			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
will include sensors, computing, power distribution, and software to sense the environment. In addition to the prototype system, the government will be delivered government use rights for the hardware and software, a well documented C++ API with associated libraries developed under this project, and other third party libraries and relevant source code. -Terrain and road estimation module development. -Prediction module development. -Prototype hardware development and construction. -Perform prototype hardware validation and test. -Technology demonstration 1. -Critical Design Review 2. 4) Long Range Vision for Obstacle Detection from a moving ground vehicle (LROD) project is to increase the capability of unmanned ground vehicles (UGVs) to respond to positive, negative, and moving obstacles. Project previously funded from PE 0603711D8Z -Continue work on sensor processing algorithm development. -Complete early performance testing. -Prototype development. -Umanned ground vehicle integration. -Performance verification testing. -Final demonstration. -Provide final report.			
FY 2012 Plans: 1) Collision Prediction Utilizing Traversability Models for Dynamic Environments will develop, demonstrate, and deliver one integrated sensor system that will detect, classify, track, and predict the motion of objects from a moving vehicle. The prototypes will include sensors, computing, power distribution, and software to sense the environment. In addition to the prototype system, the government will be delivered government use rights for the hardware and software, a well documented C++ API with associated libraries developed under this project, and other third party libraries and relevant source code. -Terrain and road estimation module development -Prediction moduel development -Prototype hardware development and construction -Perform prototype hardare validations and test. -Technology demontstration 1. -Critical Design 2.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
4) Longe Range Vision for Obstacle Detection from a moving ground vehicle (LROD) project is to increase the capability of unmanned ground vehicles (UGVs) to respond to postiive, negative and moving obstacles. Project previously funded from PE 0603711D8Z -Continue early performance testing - prototype development -Unmanned ground vehicle integration -Performed verification testing -Hold final demonstration -Provide final report			
Title: Collaborative Operations	5.380	5.153	4.861
Description: Integrate communication, mission planning, interface technologies, and advanced intelligence capabilities to support collaborative operations between manned and unmanned systems. Develop and assess several strategies to enhance tele-operation of current Unmanned Ground Vehicles (UGV) and collaborative Unmanned Air Vehicles (UAV) teams. Development of these technologies will enable unmanned systems to support war fighter concepts of operation that are envisioning unmanned systems working in collaboration across domains (air, ground, and maritime) to execute tactical missions and complex military tasks. ***FY 2010 Accomplishments:*** 1) Human Robot Interface (HRI) for Explosive Ordinance Disposal (EOD) will perform a task-oriented analysis of the human robot interface for the next generation of EOD systems. This analysis will be used to design the user interface for a common controller for the family of EOD systems being developed under the Advanced EOD Robotic Systems (AEODRS) program. -Began development of an intuitive user interface (UI) for the AEODRS unmanned ground systems -Conducted and documented a task-based UI design requirements analysis of the EOD missions for the AEODRS family's small platform. -Documented expected changes to UI design requirements based on new AEODRS form factor for small robots and handheld Operator Controlled Unit. -Began documenting wireframe screen designs and control mappings. -Implemented wireframe designs in Multi-Robot OCU (software). -Documented results of user interface design tests. 2) High Speed Small Teleoperated Robot Command and Control will develop and demonstrate an advanced system to employ unmanned ground vehicle (UGV)-based stability technologies, low latency operator control and feedback, and necessary			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
autonomy to support high speed assisted-teleoperation for small UGVs. High speed teleoperation is defined here as greater than 25 kph on improved surfaces and 15 kph on unimproved surfaces. This project addresses the problem of sub-optimized robotic performance during military operations due to a lack of operator situational awareness. The final demonstration will be a quantitative human-robot interface experiment. -Improved the suspension system on the RE2 Forerunner platform in order to improve stability at high speed. -Adapted existing vetronics retrofit package for the Talon to the Forerunner which includes local drive by wire,vehicle control, teleoperation sensing and wireless communications. -Adapted existing algorithms for model predictive control. 3) Urban Environment Exploration (UrbEE) The purpose of the Urban Environment Exploration (UrbEE) Project is to enable robotic platforms to more effectively operate within the challenging conditions of dynamic urban environments, with significantly reduced control burden on the operator. Project transitioned from PE 0603711D8Z as TRL level matured. -Began to mature adaptive localization behaviors with intermittent GPS beyond 2 buildings by localizing inside buildings within .5 m -Localizing outside buildings within 2 m. -Localizing over a 1 mile radius -Transitioning in-and-out of 3 single-story building structures. 4) Autonomous Navigation Environment (VANE) will facilitate virtual testing of Unmanned Ground Systems (UMS) ground vehicles for evaluation of onboard Autonomous Navigation Systems (ANS) and their associated hardware/software subsystems; supplement field evaluations at a reduced cost with better control and repeatability than can be obtained from physical tests to develop a geo-environmental process that can provide simulated sensor output during UMS maneuvers in complex environments; produce high fidelity three-dimensional vehicle terrain models to interact with ANS which are dependent on realistic synthetic images that include the effects of geo-environmental influences involving the ground surface and subsurface, vegetation, and meteorological conditions for sensor responses. -Identify technology transfer paths and implemented them throughout the program. -Integrate sensor models. -Integrate human signature representation and identification. -Integrate a representative autonomous navigation/control subsystem. -Began development of geo-typical urban and cross country environments. -Complete engineering level experiments and verification of VANE processes.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
5) Urban Environment Modeling project will develop, mature, and demonstrate technologies that will provide rich 3-dimensional models of complex environments. Project demonstrated autonomous generation of a 3-D world model of a 2x2 city block area using fused sensor data. Project transitioned from PE 0603711D8Z as TRL level matured. -Demonstrated autonomous generation of a 3-D world model of a 2x2 city block area using fused sensor data. 6) Miniature 3D Spatial Phase Sensors has a two-fold purpose: (a) to mature the SPI sensor to TRL 6 for small UGVs and (b) to develop new techniques to take advantage of this new type of sensor data. The goal is to develop a camera system that is small, robust, and adaptable to various environments, and which can be readily paired with other 3D imaging techniques such as structure from motion (SfM), stereo vision, or laser. Project was previously funded from PE 0603711D8Z as TRL level matured. -Project developed and demonstrated 2nd generation SPI camera system -Reduced size from current prototype to 4x4x5 inches -Demonstrated several steps of the processing pipeline to an integrated FPGA or parallel processor -Image, surface normal vector, and 3D surface data output of at least 20Hz at least 4-megapixel resolution -Documented a functional external data interface (format TBD) -Demonstrated ranging of entire SUGV-relevant scene (1m3 scene in 360o) using key point ranges obtained through structure-from-motion techniques -Demonstrated basic navigable surface detection by analyzing surface shape and texture features of the terrain.			
FY 2011 Plans: 1) Human Robot Interface (HRI) for Explosive Ordnance Disposal (EOD) will perform a task-oriented analysis of the human robot interface for the next generation of EOD systems. This analysis will be used to design the user interface for a common controller for the family of EOD systems being developed under the Advanced EOD Robotic Systems (AEODRS) program. -Document wireframe screen designs and control mappings for medium and large platforms. -Common UI design implemented in MOCU (software) for family of systems. -Document results of UI usability tests. 2) High Speed Small Teleoperated Robot Command and Control will develop and demonstrate an advanced system to employ unmanned ground vehicle (UGV)-based stability technologies, low latency operator control and feedback, and necessary autonomy to support high speed assisted-teleoperation for small UGVs. High speed teleoperation is defined here as greater than 25 kph on improved surfaces and 15 kph on unimproved surfaces. This project addresses the problem of sub-optimized robotic performance during military operations due to a lack of operator situational awareness. The final demonstration will be a quantitative human-robot interface experiment. -Adapted exisiting algorithms for rollover governor. -Adapted exisiting algorithms for predictive display.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Integrated all hardware modules on the Forerunner platform. -Conducted Capstone demonstration. * Urban Environment Modeling project will develop, mature, and demonstrate technologies that will provide rich 3-dimensional models of complex environments. Project demonstrated autonomous generation of a 3-D world model of a 2x2 city block area using fused sensor data. Project transitioned from PE 0603711D8Z as TRL level matured. -Demonstrated autonomous generation of a 3-D world model of an ~10x10 city block area in an operationally relevant environment using fused sensor data with the following metrics: Model Resolution > 20cm; Model Accuracy > 50cm; Global Registration Accuracy > 2m * Miniature 3D Spatial Phase Sensors has a two-fold purpose: (a) to mature the SPI sensor to TRL 6 for small UGVs and (b) to develop new techniques to take advantage of this new type of sensor data. The goal is to develop a camera system that is small, robust, and adaptable to various environments, and which can be readily paired with other 3D imaging techniques such as structure from motion (SfM), stereo vision, or laser. Planned Accomplishments -Develop and demonstrate 3rd generation miniature SPI camera system reduced in size to 3x3x3 inches (not including optics). -Provide full data processing (through surface normal integration stage) on integral hardware (FPGA/ASIC/Parallel processor) image, surface normal, and 3D surface data output at 30Hz at 8-megapixel resolution. -Interfacing and power consistent with reasonable small UGV constraints (ieee1394/usb/ethernet); and additional onboard processing options available such as model/data decimation, feature identification/tracking, patch segmentation, etc. (exact details TBD). ***FY 2012 Plans:*** * Counter Tunnel Exploitation will develop and demonstrate a prototype robotic system for Counter Tunnel Exploitation, Mapping and Characterization. The Tunnel Exploitation and Reconnaissance Robotic Apparatus (TERRA) system will meet the technology gaps and needs for the counter tunnel mission. This mission is currently performed by DoD warfighters for CONUS Defense Support to Civil Authority missions supported by U.S. Northern Command (USNORTHCOM).Project transitioned from PE 0603711D8Z as TRL level matured. Planned Accomplishments -Development of a umanned ground vehicle (UGV) mobility platform capable of insertion through a maximum 8 inch diameter bore hole.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Demonstrate & transition UGV mobility platform prototype. -Development of 1st generation sensor suite with 3D Simultaneous Localization and Mapping (SLAM) and modeling. -Integration of mobility platform and support apparatus into system. -1st generation sensor suite and algorithms development. -Complete mobility platform development. -Bore hole support apparatus prototype development. -2nd generation sensor suite and algorithms development. -System integration and refinement. -Integrated system demonstration. * Collision Prediction Utlizing Traversability Models			
Title: Interoperability ***Description:*** Software algorithms and interface technologies will facilitate sharing of data across unmanned platforms and domains, and with C2 systems as well as interchangeability of mission payloads and unmanned chassis. Such interoperability will enable collaborative operations between manned and unmanned systems as well as among unmanned systems in differing domains. ***FY 2010 Accomplishments:*** * 3D Visualization for Explosive Ordinance Disposal will develop, mature, demonstrate, and transition technologies that will provide the EOD UGV operators with an improved situational awareness and visualization capability for manipulation. Project transitioned from PE 0603711D8Z as TRL level matured and has transitioned to PE 0604709D8Z for FY 2011. Accomplishments -Demonstrated generation of a 3D model of a simple object from sensors mounted on an EOD class UGV. -Demonstrated generation of a 3D model of a moderately complex object from sensors mounted on an EOD class UGV. -Demonstrated an application that allows the operator to view the model from various perspectives.	1.000	-	-
Title: Man Portable UGS Technologies ***Description:*** Increase warfighter capability by transferring and developing technologies of immediate impact on man-portable robotic systems - e.g., obstacle detection/obstacle avoidance (ODOA) and collaborative behaviors for small vehicles. Certain missions and mission environments (urban, unimproved surface, mountainous, subterranean) require the use of man-portable	0.700	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
robots in support of dismounted operations. Technologies that can be scaled to low size, weight, space, and power density will enable robotic solutions to capability needs in dismounted operation areas and challenging environments. ***FY 2010 Accomplishments:*** *			
Title: Manipulation Technologies ***Description:*** Incorporate existing technologies, enable greater range of robotic manipulation, support the development of mobile manipulation, and improve manipulator performance. Development of these technologies will enable unmanned systems to conduct highly dexterous tasks that today are accomplished manually, but currently place warfighter's in extremely vulnerable and dangerous situations. ***FY 2010 Accomplishments:*** 1)Advanced Hydraulic Actuator will build a high-dexterity robot manipulator based on advanced hydraulic actuators that will significantly extend the mission capabilities over existing ground robotics. Specifically it will be able to easily manipulate objects over 100 pounds, will be energy efficient, will achieve precise control both in terms of position and force, and will have at least 7 degrees of freedom providing the dexterity for complex tasks. -Complete tradeoff analysis of the candidate arm morphologies on technical merit, value to the warfighter, and overall cost. Conformal End Effector will develop a general purpose robotic gripper with adjustable passive compliance that can manipulate most objects a human hand could. Project will build an efficient actuation system with integrated position and force sensing; and a passive impedance control system, where passive characteristics are adjustable. -Detailed Design -Modeling of the Design ***FY 2011 Plans:*** *-Demonstrate lightweight, agile conformal end effector that can grasp and support a 155mm cylinder weighing 110 pounds. -Design and fabricate three-fingered conformal end effector. -Utilize advance materials so hand weighs less than 5 pounds with target of 3.5 pounds. -Integrate end effector with manipulator developed under Highly Dexterous Manipulator project. -Demonstrate modularity of end effector interface with Highly Dexterous Manipulator interface and standard comms interface for high-level commands. ***FY 2012 Plans:***	1.250	1.324	1.875

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Projects in this technology area will be selected in July 2011.			
Title: Technology Transition / Transformation	0.626	0.750	1.564
Description: Facilitate integration of technologies to ongoing programs: exploit best features of past and ongoing efforts, e.g., interface technologies (Human Robot Interaction) and autonomous operations. Robotics technologies are being matured with the express intent of transitioning them out of the laboratory to either programs of record, licensing to industry to foster COTS solutions, or integration onto fielded systems. ***FY 2010 Accomplishments:*** Funding will be utilized to assist in transition or transformation of the following projects but not limited to: * Autonomous Navigation for Small UGVs (ANSU) * Advanced Hydraulic Actuator * Unmanned Ground Vehicles for Small Unit Logistics ***FY 2011 Plans:*** Funding will be utilized to assist in transition or transformation of the following projects but not limited to: * HRI for Explosive Ordinance Disposal * Urban Environment Exploration * Maritime Interdiction Operations Experimentation * Robotic Gripper with Adjustable Passive Compliance * Very Low Cost LADAR * Long Range Vision for Obstacle Detection * Own the Night v2 * High Speed Small Teleoperated Robot Command and Control * Autonomous Navigation Environment (VANE) * Urban Environment Modeling * 3D Visualization for Explosive Disposal Robots * Miniature 3D Spatial Phase Sensors * Collision Prediction Utilizing Traversability Models for Dynamic Environments ***FY 2012 Plans:*** * Counter Tunnel Exploitation			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
* Collision Prediction Utlizing Traversability Models Remaining projects in this technology area will be selected in July 2011.			
Accomplishments/Planned Programs Subtotals	10.968	9.878	11.129

	FY 2010	FY 2011
Congressional Add: Autonomous Machine Vision for Mapping and Investigation of Remote Sites ***FY 2010 Accomplishments:*** -Develope architecture design. ***FY 2011 Plans:*** -Physical demonstration of the proposed system.	1.600	-
Congressional Add: Joint Robotics Training Program ***FY 2010 Accomplishments:*** Job Analysis Verification: -Job Profile 3 More Positions (UGV, UAV, & USV). -Hold mini-DACUM review and revision. FDTC Credit Certificate: -Develop and Implement certificate program. -Develop online instructor lead Delivery of Certification and Certificate. -Develop online fully independent delivery of Certification and Certificate. -Deliver certificate & certification online. -Develop national two year college network. Protégé Support & Transition Program: -Support Protégé product transition needs. -Brief MP Program Managers on capabilities. -Continue development of small business tools. ***FY 2011 Plans:*** Two year Robotics Manufacturing Degree: -DACUM for 2 Year Degree. -Develop national two year college network offering two year high tech / robotics manufacturing degree program.	2.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

	FY 2010	FY 2011
-Implement 2 Year Degree. -Develop online delivery of 2 year degree. Protégé Support & Transition Program: -Support Protégé product transition needs. -Expand MP program field support to other branches. -Develop Transition Training Program.		
Congressional Adds Subtotals	3.600	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0603711D8Z : *Autonomous*	11.020	8.791	9.710		9.710	10.071	10.281	10.520	10.857	Continuing	Continuing
• 0604709D8Z : *Robotics*	4.720	3.869	2.782		2.782	2.574	2.623	2.763	4.166	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

1. Technologies to be funded & developed are reviewed by Joint Capability Area focused working groups and the Joint Staff Functional Capabilities Boards to determine progress, transition plans, and relevance of each project.
2. Project plans are submitted, evaluated and analyzed by the Joint Robotics Ground Enterprises management and technical staff for risk and progress.
3. Project progress toward goals and milestones is assessed during mid-year and end-of-year reviews.
4. Technologies developed by the Joint Robotics Ground Enterprises (JGRE) are tracked and documented using the DoD Technical Readiness Level (TRL) scale for developing TRL 3 or 4 technologies to TRL 6 and adhearing to the integrated baselines with regard to cost and schedule.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Ground Robotics Enterprise	MIPR	Multiple:Multiple	26.858	9.878	Sep 2098	11.129	Sep 2098	-		11.129	Continuing	Continuing	
		Subtotal	26.858	9.878		11.129		-		11.129			

Remarks

Funding value captures the total planned for obligation across the PE. The Joint Ground Robotics Enterprise (JGRE) utilizes several contracting and management strategies to achieve its objectives. This PE supports the need to integrate technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedite technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Funded projects will continue the delivery of responses to advanced technology needs enhancing the warfighter's capabilities identified during concept development, operational assessments and field feedback of current unmanned systems.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Ground Robotics Enterprise	MIPR	Multiple:Multiple	-	-	Sep 2098	-	Sep 2098	-		-	0.000	0.000	
		Subtotal	-	-		-		-		-	0.000	0.000	

Remarks

Funding value captures the total planned for obligation across the PE. The Joint Ground Robotics Enterprise (JGRE) utilizes several contracting and management strategies to achieve its objectives. This PE supports the need to integrate technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedite technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Funded projects will continue the delivery of responses to advanced technology needs enhancing the warfighter's capabilities identified during concept development, operational assessments and field feedback of current unmanned systems.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Ground Robotics Enterprise	MIPR	Multiple:Multiple	-	-	Sep 2098	-	Sep 2098	-		-	Continuing	Continuing	
		Subtotal	-	-		-		-		-			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Funding value captures the total planned for obligation across the PE. The Joint Ground Robotics Enterprise (JGRE) utilizes several contracting and management strategies to achieve its objectives. This PE supports the need to integrate technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedite technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Funded projects will continue the delivery of responses to advanced technology needs enhancing the warfighter's capabilities identified during concept development, operational assessments and field feedback of current unmanned systems.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Joint Ground Robotics Enterprise Support	MIPR	TBD:TBD	0.203	-	Sep 2010	-		-		-	Continuing	Continuing	
		Subtotal	0.203	-		-		-		-			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	27.061	9.878		11.129		-		11.129			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

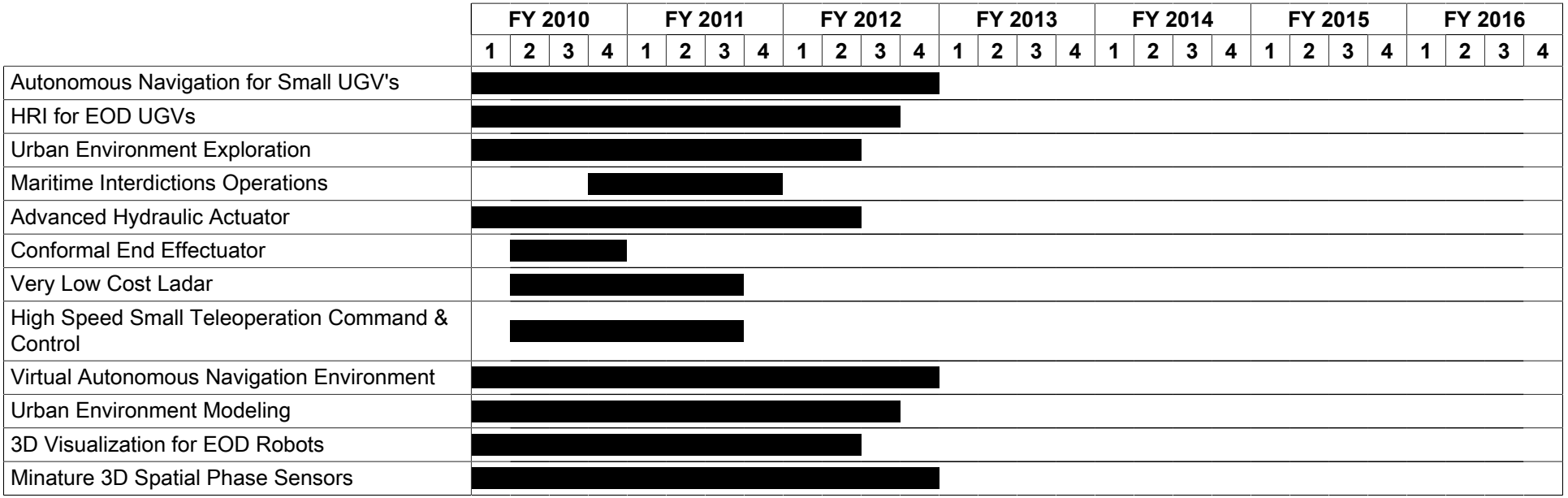

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603709D8Z: *Joint Robotics Program*	**PROJECT** P709: *Joint Robotics Program*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Autonomous Navigation for Small UGV's	1	2010	4	2012
HRI for EOD UGVs	1	2010	3	2012
Urban Environment Exploration	1	2010	2	2012
Maritime Interdictions Operations	4	2010	4	2011
Advanced Hydraulic Actuator	1	2010	2	2012
Conformal End Effectuator	2	2010	4	2010
Very Low Cost Ladar	2	2010	3	2011
High Speed Small Teleoperation Command & Control	2	2010	3	2011
Virtual Autonomous Navigation Environment	1	2010	4	2012
Urban Environment Modeling	1	2010	3	2012
3D Visualization for EOD Robots	1	2010	2	2012
Minature 3D Spatial Phase Sensors	1	2010	4	2012

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603714D8Z: *Advanced Sensors Application Program*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	17.600	18.060	18.408	-	18.408	18.810	19.195	19.569	20.125	Continuing	Continuing
714: *Advanced Sensors Application Program*	17.600	18.060	18.408	-	18.408	18.810	19.195	19.569	20.125	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The program focuses on continued development of domestic technologies to support the assessment of foreign technologies that have demonstrated potential for improvements in U.S. capabilities. Unique and innovative approaches are used to expand the performance envelopes of existing systems. This program supports military requirements identified in Joint Vision 2020, the Defense Science and Technology Strategy, the Anti-Submarine Warfare (ASW) Initial Capabilities Document, and the Fleet ASW Integrated Prioritized Capability List.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	17.627	18.060	18.434	-	18.434
Current President's Budget	17.600	18.060	18.408	-	18.408
Total Adjustments	-0.027	-	-0.026	-	-0.026
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department adjustment	-0.027	-	-0.026	-	-0.026

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Advanced Sensor Applications Program	17.600	18.060	18.408
FY 2010 Accomplishments: Mission Support details provided in Defense-Wide classified book.			
FY 2011 Plans: Mission Support (Details provided in Defense-Wide classified book)			
FY 2012 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603714D8Z: *Advanced Sensors Application Program*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Mission Support (Details provided in Defense-Wide classified book)			
Accomplishments/Planned Programs Subtotals	17.600	18.060	18.408

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

Details provided in Defense-Wide classified book.

F. Performance Metrics

Numbers of operational field demonstrations; actual/in-kind resource sharing differential among participating entities; studies produced; successful anomaly detections; false-positive results; and technology transfers.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603714D8Z: *Advanced Sensors Application Program*	PROJECT 714: *Advanced Sensors Application Program*	

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		-		-		-	0.000	0.000	0.000

Remarks

Details provided in Defense-Wide classified book for Exhibit R3 and R4.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603851D8Z: *Environmental Security Technology Certification Program*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	40.998	30.419	63.606	-	63.606	39.703	37.365	31.151	31.126	Continuing	Continuing
P514: *Environmental Security Technology Certification Program*	40.998	30.419	63.606	-	63.606	39.703	37.365	31.151	31.126	Continuing	Continuing

A. Mission Description and Budget Item Justification

(U) This program demonstrates and validates the most promising innovative environmental and energy technologies that target DoD's most urgent needs. Technologies selected are projected to provide pay back of the investment through cost savings and improved efficiencies. The program responds to: (1) Congressional concern over the slow pace of remediation of environmentally polluted sites on military installations, (2) Congressional direction to conduct demonstrations specifically focused on emerging new technologies, and (3) the need to improve defense readiness by reducing the drain on the Department's operation and maintenance dollars caused by environmental restoration, waste management, and the cost of energy. Preference for demonstrations are given to technologies that have successfully completed all necessary research and development objectives, and address the highest priority DoD requirements.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	31.613	30.419	31.222	-	31.222
Current President's Budget	40.998	30.419	63.606	-	63.606
Total Adjustments	9.385	-	32.384	-	32.384
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	9.385	-	50.625	-	50.625
• Defense Efficiency - Baseline Review Adjustments	-	-	-15.670	-	-15.670
• Defense Efficiency - Report, Studies, Boards, and Commissions	-	-	-1.332	-	-1.332
• Defense Efficiency - Contractor Staff Support	-	-	-1.169	-	-1.169
• Economic Assumptions	-	-	-0.070	-	-0.070

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603851D8Z: *Environmental Security Technology Certification Program*	PROJECT P514: *Environmental Security Technology Certification Program*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P514: *Environmental Security Technology Certification Program*	40.998	30.419	63.606	-	63.606	39.703	37.365	31.151	31.126	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

(U) ESTCP demonstrates and validates the most promising innovative environmental and energy technologies that target DoD's most urgent needs. Technologies selected are projected to provide a return on the investment through cost savings and improved efficiencies. The program responds to: (1) Congressional concern over the slow pace of remediation of environmentally polluted sites on military installations, (2) Congressional direction to conduct demonstrations specifically focused on emerging new technologies, and (3) the need to improve defense readiness by reducing the drain on the Department's operation and maintenance dollars caused by environmental restoration,waste management, and the cost of energy. Preference for demonstrations is given to technologies that have successfully completed all necessary research and development objectives, and address the highest priority DoD requirements.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Environmental Technology Demonstration/Validation	40.998	30.419	33.606

Description: Funds are programmed for investments in projects that address priority DoD environmental requirements. The focus of the program is on live site UXO discrimination demonstrations, addressing emerging and recalcitrant cleanup issues, range sustainment technologies, and reducing life cycle costs of DoD weapon systems by eliminating hazardous materials. Accomplishments/plans are described for each FY below.

FY 2010 Accomplishments:

(U) FY 2010 Accomplishments:

Funds were programmed for investments in projects that address priority DoD environmental requirements. The focus of the program was on live site UXO discrimination demonstrations, addressing emerging and recalcitrant cleanup issues, range sustainment technologies, and reducing life cycle costs of DoD weapon systems by eliminating hazardous materials. Funds were primarily required to continue and complete ongoing investments. In addition, four Congressionally directed projects were executed.

Investment by Focus Area:
- Environmental Restoration: ($13.400 million)
- Munitions Response: ($6.300 million)
- Resource Conservation: ($7.600 million)

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603851D8Z: *Environmental Security Technology Certification Program*	PROJECT P514: *Environmental Security Technology Certification Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Weapons Systems and Platforms: ($11.100 million) - Provide pro-rata share to AT&L/WHS to cover administrative support cost and SBIR/STTR ($0.835 million) ***FY 2011 Plans:*** (U) 2011 Plans: Funds are planned for continued investment in projects that address priority DoD environmental requirements. Focused new investment topics for FY 2011 include: 1) Remediation of Contaminated Groundwater; 2) In Situ Management of Contaminated Sediments; 3) Characterization, Control, and Treatment of Range Contamination; and 4) Military Munitions Detection, Discrimination, and Remediation. Details are provided at www.serdp-estcp.org ***FY 2012 Plans:*** (U) 2012 Plans: Funds are planned for continued investment in projects that address priority DoD environmental requirements. Focused new investment topics for FY 2012 include: 1) Remediation of Contaminated Groundwater; 2) In Situ Management of Contaminated Sediments; 3) Characterization, Control, and Treatment of Range Contamination; and 4) Military Munitions Detection, Discrimination, and Remediation. Increased funding in FY 2012 is to support new live site UXO demonstrations. This effort will transition innovative technologies that can reduce DoD's military munitions response liabilities by approximately 75% with an expected cost savings of $10 billion. Details are provided at www.serdp-estcp.org			
Title: Energy Technology Demonstration/Validation ***Description:*** Funds are programmed for investments in projects that respond to Congressional direction for the Department to increase energy efficiency, reduce installation energy intensity, increase the use of renewable energy, and improve energy security. Emerging energy technologies offer DoD a cost effective opportunity to meet these requirements for reduced energy consumption and improved energy security on its installations while reducing energy and operational costs. ***FY 2012 Plans:*** FY2012 Funds are planned to continue investments in energy projects that constitute the Installation Energy Test Bed Initiative. The test bed program will validate and test the operational cost and performance of innovative energy technologies in a real-world integrated building environment so as to reduce risk, overcome the barriers to deployment, and facilitate wide-scale deployment. The DoD test bed program exploits the Department's existing built infrastructure to test energy efficiency and renewable energy technologies in three areas: component technologies (i.e., HVAC, lighting, distributed energy generation); system approaches to building energy design, control, and management; and installation-level smart micro-grid technologies. It is a distributed test bed designed to evaluate energy technologies under the varied climatic conditions and building types DoD manages. The	-	-	30.000

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603851D8Z: *Environmental Security Technology Certification Program*	PROJECT P514: *Environmental Security Technology Certification Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
test beds key elements are: 1) competitive selection of new technologies, 2) systematic and consistent evaluation to determine performance, operational readiness and life cycle costs, and 3) development of guidance and design information for future deployment across installations. This process has been developed, piloted, and validated through previous Congressional funding. Information on existing demonstrations can be found at WWW.SERDP-ESTCP.ORG.			
Accomplishments/Planned Programs Subtotals	40.998	30.419	63.606

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

ESTCP solicits proposals from all DoD organizations, other Federal Agencies, and the commercial sector. Projects are selected based on an annual competitive process through reviews by multi-agency panels.

E. Performance Metrics

Performance in this program is monitored at two levels. At the lowest level, each individual project is measured against technical and financial milestones on a quarterly and annual basis. At a program-wide level, progress is measured against DoD's environmental requirements and the demonstration and transition of technologies that address these requirements.

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603851D8Z: *Environmental Security Technology Certification Program*	PROJECT P514: *Environmental Security Technology Certification Program*

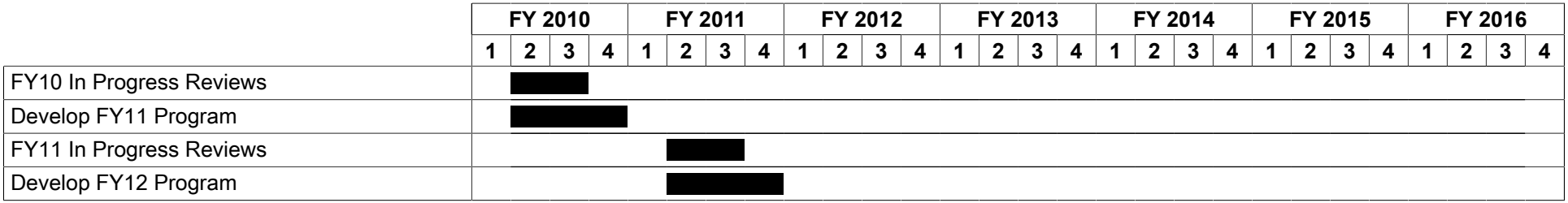

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603851D8Z: *Environmental Security Technology Certification Program*	**PROJECT** P514: *Environmental Security Technology Certification Program*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FY10 In Progress Reviews	2	2010	3	2010
Develop FY11 Program	2	2010	4	2010
FY11 In Progress Reviews	2	2011	3	2011
Develop FY12 Program	2	2011	4	2011

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603920D8Z: *Humanitarian De-mining*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	14.362	14.735	14.996	-	14.996	15.372	13.976	13.868	12.788	Continuing	Continuing
920: *Humanitarian De-mining*	14.362	14.735	14.996	-	14.996	15.372	13.976	13.868	12.788	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Humanitarian Demining Research and Development (HD R&D) program element develops, demonstrates and evaluates prototype mine/unexploded ordnance (UXO) clearing technologies for U.S. forces and for indigenous, DoD-supported, host nation-conducted demining operations. The HD R&D Program focuses on development of technologies to improve the efficiency and safety of removing post-conflict landmines and UXO, which are a significant danger to U.S. forces performing peace and stability operations, as well as to civilians. The HD R&D Program adapts commercial-off-the-shelf equipment, integrates mature technologies, and leverages R&D activity within DoD, particularly in the Army's Night Vision and Electronic Sensors Directorate (NVESD) Tactical Countermine mission area. Equipment capabilities are assessed by host nation demining partners (foreign military, non-governmental organizations and mine action centers) in actual demining conditions. Since 1995 the Program has fielded technology for 105 evaluations in 35 countries, including Iraq and Afghanistan. The program aims to improve existing technologies for: mine/UXO detection, technical survey/area reduction, mechanical mine/UXO and vegetation clearance, mine neutralization, individual deminer protection, marking and mapping of mines/minefields, and post-clearance quality assurance (QA). Areas of emphasis are identified and validated at a biennial Requirements Workshop held by the Office of the Assistant Secretary of Defense for Special Operations, Low Intensity Conflict and Interdependent Capabilities (OASD SO/LIC&IC). The Requirements Workshop involves representatives from DOS, U.S. combatant commands (COCOMS) and mine-affected nations. Under OASD SO/LIC&IC, the HD R&D Program works closely with the COCOMS and the Humanitarian Demining Training Center (HDTC) to “support the Warfighter” by reducing insurgent access to explosives, providing engagement opportunities for DoD personnel, and speeding improvements to detection and clearance technologies used by U.S. forces in support of USG operations.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	14.687	14.735	15.016	-	15.016
Current President's Budget	14.362	14.735	14.996	-	14.996
Total Adjustments	-0.325	-	-0.020	-	-0.020
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.184	-			
• SBIR/STTR Transfer	-0.141	-			
• Economic Assumptions	-	-	-0.020	-	-0.020

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603920D8Z: *Humanitarian De-mining*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: 0603920D8Z - SO/LIC Humanitarian De-mining	14.362	14.735	14.996

Description: The Humanitarian Demining Research and Development (HD R&D) program element develops, demonstrates and evaluates prototype mine/UXO clearing technologies for U.S. forces and for indigenous, DoD-supported, host nation-conducted demining operations. The HD R&D Program focuses on development of technologies to improve the efficiency and safety of removing post-conflict landmines and UXO, which are a significant danger to U.S. forces performing peace and stability operations, as well as to civilians. The HD R&D Program adapts commercial-off-the-shelf equipment, integrates mature technologies, and leverages R&D activity within DoD, particularly in the Army's Night Vision and Electronic Sensors Directorate (NVESD) Tactical Countermine mission area. Equipment capabilities are assessed by host nation demining partners (foreign military, non-governmental organizations and mine action centers) in actual demining conditions. Since 1995 the Program has fielded technology for 105 evaluations in 35 countries, including Iraq and Afghanistan. The program aims to improve existing technologies for: mine/UXO detection, technical survey/area reduction, mechanical mine/UXO and vegetation clearance, mine neutralization, individual deminer protection, marking and mapping of mines/minefields, and post-clearance quality assurance (QA). Areas of emphasis are identified and validated at a biennial Requirements Workshop held by the Office of the Assistant Secretary of Defense for Special Operations, Low-Intensity Conflict and Interdependent Capabilities (OASD SO/LIC&IC). The Requirements Workshop involves representatives from DOS, U.S. combatant commands (COCOMS) and mine-affected nations. Under OASD SO/LIC&IC, the HD R&D Program works closely with the COCOMS and the Humanitarian Demining Training Center (HDTC) to “support the Warfighter” by reducing insurgent access to explosives, providing engagement opportunities for DoD personnel, and speeding improvements to detection and clearance technologies used by U.S. forces in support of USG operations.

FY 2010 Accomplishments:
The HD R&D Program actively engaged in the operational field evaluations of 37 humanitarian demining (HD) technologies in 10 countries. As a result of requests made during the biennial Requirements Workshop, OCONUS field assessments, and in-house developments, the HD R&D Program deployed many of its systems to humanitarian demining organizations overseas, including locations in Afghanistan and Iraq. In addition, the program provided technology in support of CENTCOM (Tajikistan) and PACOM (Sri Lanka). Deployments initiated in FY2010 included mine sifting equipment in Iraq, the Mini MineWolf in Tajikistan on the Afghan border, mine neutralization equipment in Ecuador, and Badger in Cambodia. In addition, the HD R&D Program continued its deployments of the Tempest, Maxx+, Handheld Standoff Mine Detection System (HSTAMIDS), Beaver II, Long-Handled Tools, Storm, Explosive Harvesting System, Sifting Attachments, Survivable Demining Tractors, Uni-Disk, Beaver, Peco, Multi-Tool Excavator, Air-Spade, Improved Backhoe, MANTIS, Orbit Sifter, Walking Tractor, Modular Detection Array, Heavy Detonation Trailer, JCB Loadall, and the Rotary Mine Comb to countries in Africa, South America and Asia. The HD R&D Program continued final development, test and evaluation of prototype technologies in the following areas: individual mine/UXO and minefield detection, wide area survey, mechanical mine/UXO and vegetation clearance, mine neutralization, individual

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603920D8Z: *Humanitarian De-mining*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
soldier/deminer protection, marking and mapping of mines/minefields, and post-clearance quality assurance (QA). The HD R&D Program supported the combatant commands and Embassy staffs by conducting site assessments to determine whether HD equipment could be effectively utilized in Sri Lanka, Colombia, Cambodia, Senegal, Angola and Vietnam. In addition, data from the HD R&D Program's intensive evaluation of HSTAMIDS in the humanitarian demining context continued to provide critical training and enhance development of the U.S. Army's Tactical Countermine HSTAMIDS and NIITEK Ground Penetrating Radar technologies. In FY2010 prototype development, program engineers completed several prototypes, including the Wolverine, Remote Mini Excavator, Mine Stalker and Luxor, which will transition to operational field evaluations in FY2011. In FY2010 the HD R&D Program tested 19 mine detection and clearance systems at Fort AP Hill, Aberdeen Proving Grounds and Yuma Proving Grounds. ***FY 2011 Plans:*** The HD R&D Program will complete ongoing equipment developments/modifications and operational field evaluations from FY2010, including new evaluations of the Raptor mine clearance system in Afghanistan, Improved Backhoe mine and vegetation clearance system in Sri Lanka, Hedgehog mine detection and vegetation clearance system in Colombia, Mine Stalker AT and HSTAMIDS mine detection systems in Angola, and Rex vegetation clearance and Luxor UXO detection systems in Cambodia. The HD R&D Program will support the combatant commands and Embassy staffs by conducting site surveys or country assessments in Mozambique, Vietnam, Laos, Macedonia, eastern Cambodia, Sri Lanka, northern Tajikistan and other locations as requested. The program will continue development, test and evaluation of prototype technologies in the following areas: individual mine/UXO and minefield detection, wide area survey, mechanical mine/UXO and vegetation clearance, mine neutralization, individual soldier/deminer protection, marking and mapping of mines/minefields, and post-clearance quality assurance (QA). ***FY 2012 Plans:*** The HD R&D Program will complete ongoing equipment developments/modifications and operational evaluations from FY2011. The HD R&D Program will support the combatant commands and Embassy staffs by conducting site surveys or country assessments. The program will continue development, test and evaluation of prototype technologies in the following areas: individual mine/UXO and minefield detection, wide area survey, mechanical mine/UXO and vegetation clearance, mine neutralization, individual soldier/deminer protection, marking and mapping of mines/minefields, and post-clearance quality assurance (QA).			
Accomplishments/Planned Programs Subtotals	14.362	14.735	14.996

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603920D8Z: *Humanitarian De-mining*

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

Following a rapid prototyping strategy, the program emphasizes the use/modification of existing, commercially-available items and components to build functional prototype equipment suited for humanitarian demining operations. This approach is required due to the immediate need for new demining technologies in the face of ongoing U.S. forces and host nation citizen casualties in mine-affected countries. The program evaluates prototype equipment by acquiring it off-the-shelf from industry using competition to the extent possible, by leveraging ongoing countermine R&D efforts in other U.S. and foreign R&D activities, and by taking advantage of extensive in-house fabrication capabilities at the Army's Night Vision and Electronic Sensors Division (NVESD).

F. Performance Metrics

Long Term Strategies: Obtain adequate funding to support critical shortfalls; prioritize proposals that are deemed acceptable and allocate funding accordingly; and establish outreach programs to leverage institutional knowledge and expertise.

Performance Indicator and Rating:

FY 2010 Target:
70% of currently funded research technologies are completed on time and within budget
Complete scheduled R&D project tasks
Transition field-ready technologies to host nation demining partners
Conduct biennial Humanitarian R&D Program Requirements Workshop

FY 2011 Target:
70% of currently funded research technologies are completed on time and within budget
Complete scheduled R&D project tasks
Transition field-ready technologies to host nation demining partners

Basis of FY 2010 to Date Performance Rating: Currently the number of funded research technologies is on track to be completed per the target.

Verification: The Humanitarian Demining Program performs program reviews with other USG agencies (DOS PM WRA, DTRA SA/LW, DSCA, HDTC, CENTCOM, PACOM, SOUTHCOM, AFRICOM, EUCOM) and has oversight from OSD SO/LIC&IC.

Validation: Completed R&D products increase the capabilities of the DoD to effectively perform demining missions.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603923D8Z: *Coalition Warfare*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	13.094	13.786	12.743	-	12.743	13.026	13.154	13.293	13.583	Continuing	Continuing
P923: *Coalition Warfare*	13.094	13.786	12.743	-	12.743	13.026	13.154	13.293	13.583	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Coalition Warfare Program (CWP) is the only Office of the Secretary of Defense (OSD) program dedicated to initiating cooperative research and development (R&D) projects with allies and coalition partners. The goal of the effort is to assist the Combatant Commands, Services, and Agencies with integrating coalition-enabling solutions into existing and planned U.S. programs. This collaborative development of warfighter capabilities contributes to the Department's security cooperation strategy.

Fighting the war on terrorism and coping with the new and emerging threats have made addressing coalition warfare issues a priority for policy makers and senior leaders throughout the U.S. government. Coalitions are, and will continue to be, the standard means for addressing international crises--lending political legitimacy and providing resources that mitigate U.S. financial, materiel, and personnel burdens. Interoperability gaps can compromise operational effectiveness and jeopardize force protection (e.g., cause fratricide). Cooperative efforts with likely coalition partners can help address these interoperability gaps, as well as mitigate capability gaps in areas such as: battlespace awareness, C4ISR, joint fires, intelligence fusion and data sharing, combat identification, logistics, weapon systems, and information sharing.

Additionally, small investments in interoperability early in the R&D process can help avoid larger expenses related to adding coalition capability later in the development cycle. Partner nations participate to the extent permitted by security considerations when such partnering is advantageous to the U.S. government.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603923D8Z: *Coalition Warfare*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	13.885	13.786	13.454	-	13.454
Current President's Budget	13.094	13.786	12.743	-	12.743
Total Adjustments	-0.791	-	-0.711	-	-0.711
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.400	-			
• SBIR/STTR Transfer	-0.253	-			
• Other Program Adjustments	-0.138	-	-0.139	-	-0.139
• Defense Efficiency – Contractor Staff Support	-	-	-0.234	-	-0.234
• Defense Efficiency – Report, Studies, Boards and Commissions	-	-	-0.338	-	-0.338

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603923D8Z: *Coalition Warfare*	PROJECT P923: *Coalition Warfare*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P923: *Coalition Warfare*	13.094	13.786	12.743	-	12.743	13.026	13.154	13.293	13.583	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Coalition Warfare Program (CWP) is the only Office of the Secretary of Defense (OSD) program dedicated to initiating cooperative research and development (R&D) projects with allies and coalition partners. The goal of the effort is to assist the Combatant Commands, Services, and Agencies with integrating coalition-enabling solutions into existing and planned U.S. programs. This collaborative development of warfighter capabilities contributes to the Department's security cooperation strategy.

Fighting the war on terrorism and coping with the new and emerging threats have made addressing coalition warfare issues a priority for policy makers and senior leaders throughout the U.S. government. Coalitions are, and will continue to be, the standard means for addressing international crises--lending political legitimacy and providing resources that mitigate U.S. financial, materiel, and personnel burdens. Interoperability gaps can compromise operational effectiveness and jeopardize force protection (e.g., cause fratricide). Cooperative efforts with likely coalition partners can help address these interoperability gaps, as well as mitigate capability gaps in areas such as: battlespace awareness, C4ISR, joint fires, intelligence fusion and data sharing, combat identification, logistics, weapon systems, and information sharing.

Additionally, small investments in interoperability early in the R&D process can help avoid larger expenses related to adding coalition capability later in the development cycle. Partner nations participate to the extent permitted by security considerations when such partnering is advantageous to the U.S. government.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: FY08 Continuing Projects ***Description:*** Program provided additional funding to projects that began in FY08. ***FY 2010 Accomplishments:*** Some FY08 projects received FY10 funding. Among the capabilities that these projects will deliver are a fieldable fluxgate magnetometer that will have force protection applications and a tactile stimulation capability for pilots operating in degraded visual environments.	0.760	-	-
Title: FY09 Continuing Projects ***Description:*** Program selected 14 projects in the FY09 nomination cycle. ***FY 2010 Accomplishments:***	5.352	0.100	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603923D8Z: *Coalition Warfare*	PROJECT P923: *Coalition Warfare*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY09 projects began to wrap up their efforts. Among the capabilities that these projects will deliver are: an interoperable, manageable, and secure coalition network based on existing and emerging standards; software solutions to enable shared situational awareness and command and control messages with coalition partners; an enhanced capability for coalition warfare partners to interdict smuggled nuclear devices and materials; and an imagery processing capability for inclusion in the Army ground-based platform trainer. ***FY 2011 Plans:*** One FY09 project will receive FY11 funding. Project will deliver a software defined radio waveform specification that will support waveform porting to the participants' national radios.			
Title: FY10 Continuing Projects ***Description:*** Program selected 10 projects in the FY10 nomination cycle. ***FY 2010 Accomplishments:*** Projects began efforts that will result in better nighttime vision capabilities, laser protection for MWIR detectors, improved joint and coalition execution of pre-deployment mission rehearsals, and improved adaptive planning and mission rehearsal execution for emerging threats. ***FY 2011 Plans:*** Projects will wrap up efforts that will deliver: a maritime and land-based sensor/communication/common operating picture system capable of monitoring and detecting activity in the riverine and inland near-water environments; a multilateral information exchange capability that will maximize sharing of quality information; and the technical capability within the fire support community to update fire control input data without the need to completely retest and reissue new software. ***FY 2012 Plans:*** Projects selected in FY10 will wrap up.	5.892	5.235	0.285
Title: Coalition Data Control Software (CDCS) ***Description:*** Through multinational experimentation, project will research and adapt existing data control software technology. Capability will provide a cost effective approach to achieve network interoperability with certain allies in operations at Brigade and below through a secret enclave without the use of guards. ***FY 2011 Plans:*** Begin research and development. Plan and execute capability testing at MNE 5.0 (Multinational Experiment) series experiments. ***FY 2012 Plans:***	-	1.000	1.000

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603923D8Z: *Coalition Warfare*	PROJECT P923: *Coalition Warfare*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Evaluate and identify requirements. Conduct test in MNE 6.0 events			
Title: Counter-Tunneling Initiative ***Description:*** Computational modeling results will be used to produce a physics-based mission planning tool (MPT) that will direct the selection and placement of electromagnetic (EM) sensors. This will increase the probability of tunnel detection by providing the tactical warfighter with the optimal EM sensor, sensor placement information, and sensor orientation information based on the local operating environment. ***FY 2011 Plans:*** Develop EM modeling and simulations (M&S) using knowledge gained through technical exchange, previous testing, and testing regimes. Document and share the results of the M&S. Acquire further data to compare the actual results to the models to determine required modifications for enhanced performance. ***FY 2012 Plans:*** Conduct necessary modifications to the sensor software and mission planning tool. Conduct a second iteration of M&S using parameters from the modifications. Provide recommendations for modifications to the sensor.	-	0.500	0.500
Title: Collaborative Software Initiative (CSI) ***Description:*** Collaborative research and development of Norwegian and U.S. Navy combat system enhancements to address current shortfalls in high Northern situational awareness. ***FY 2010 Accomplishments:*** 0 ***FY 2011 Plans:*** Negotiate software baselines, data sharing and collaborative process. ***FY 2012 Plans:*** Develop CONOPS, test plan, ASW and maritime situational awareness software modules. Conduct a technical demonstration of software of northern waters situational awareness system. Conduct operational demonstration of northern waters situational awareness system and platform ASW system and software.	-	0.230	0.470
Title: Coalition Antennas and Spectrum Management Interoperability ***Description:*** This effort will enhance coalition communications interoperability through two major tasks: 1) The investigation and development of a spectrum data message exchange mechanism to enhance spectrum planning between the U.S. and Republic of	-	0.190	0.160

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Korea (ROK), and 2) The modeling, design, fabrication, test and demonstration of a novel, conformal, beam steered antenna array on a small, surrogate UAV platform. ***FY 2011 Plans:*** Conduct information exchange, scenario definition, and simulation and validation testing activities with partners. Complete the modeling and design for the antenna and begin antenna fabrication. ***FY 2012 Plans:*** Complete interoperability software development, conduct joint evaluation or results and complete the antenna fabrication and testing/demonstration.			
Title: Fibrinogen Supplementation in Treating Trauma Patients with Bleeding Complications ***Description:*** This project will determine whether fibrinogen concentrate is effective to stop bleeding in trauma patients with bleeding complications and determine the underlying mechanisms related to the effects of fibrinogen concentrate on restoring coagulation function in trauma patients ***FY 2010 Accomplishments:*** Establish a working team, including hiring a research nurse and a research technician; set up the working environment (equipment, etc); enroll patients and perform studies, collect clinical data, perform sample analysis, compile and analyze data.	0.284	-	-
Title: ITA Policy Controlled Coalition Information Query & Dissemination ***Description:*** This project will develop enhanced capabilities for the processing, exploitation and dissemination (PED) process for intelligence analysts and ISR data and information consumers by developing an extensible capability of performing distributed federated query and information dissemination across a network of distributed disparate data and information sources. ***FY 2011 Plans:*** Begin technology development efforts of algorithms and associated software modules. Efforts will be supported by data collection and analysis, simulation, and equipment purchase. ***FY 2012 Plans:*** Continue technology development, with emphasis on algorithm and software implementation on target network platforms. Conduct testing and evaluation and a full-scale technology demonstration of policy-controlled coalition query & dissemination.	-	0.500	0.500
Title: Joint Cross-Domain Collaboration (JC-DC)	-	0.625	0.625

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This project will research, develop, deploy, and demonstrate a new Joint Cross-Domain Collaboration suite that facilitates near real-time exchanges of multimedia information while maintaining information assurance requirements. Design in transferability to other COCOMS and coalition partners. ***FY 2011 Plans:*** Research, test and evaluate Collaboration Gateway. Begin developing hardware modifications and new software. ***FY 2012 Plans:*** Complete hardware modifications and new software. Test, evaluate and deliver: A) Cross-domain Social Networking Services, and B) Cross-Domain Audio & Video streaming.			
Title: Mobile Learning Environment (MoLE) ***Description:*** Project aims to leverage a global cellular network infrastructure, mobile phones, and emerging mobile application/ service models to build a mobile learning capability to facilitate the sharing of educational content between U.S. and multi-national partners in support of medical stability operations. ***FY 2011 Plans:*** Conduct workshop and establish and formalize collaborative arrangements. Complete management plan, identify medical training courses, and address specific technical requirements of the mobile courses. Complete technical course design and initiate IP integration documentation. Convert medical courses to m-learning. ***FY 2012 Plans:*** Complete test plan and m-Learning IP access requirements. Consolidate the results and convene a workshop to seek final input from participants and share findings incorporated in the final project report.	-	0.587	0.374
Title: NATO Universal Armament Interface (NUAI) Demonstration ***Description:*** Project will demonstrate the ability to integrate platform and weapon systems, independently developed by separate nations, without the need to modify platform software. ***FY 2011 Plans:*** Complete the development of the test plan and begin the certification tool updates. ***FY 2012 Plans:*** Conduct certification of tool integration and testing. Conduct lab integration and testing. Use findings to update NUAI standards.	-	0.500	0.200
Title: Ultra-stable, High-precision Optoelectronic Oscillators (OEO)	-	0.210	0.215

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603923D8Z: *Coalition Warfare*	PROJECT P923: *Coalition Warfare*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Project will develop an optoelectronic oscillator (OEO) that has ultra-low phase noise, low vibrational susceptibility, and ultra-long stability. The OEO will be used as a local master oscillator, acting as a 'flywheel' to maintain inter-system synchronization when an external master oscillator/clock signal or GPS is unavailable. ***FY 2011 Plans:*** Characterize and model noise sources. Design and build OEO. ***FY 2012 Plans:*** Experimentally verify optimal configuration and deliver software model. Conduct lab demonstrations.			
Title: Over the Horizon Radar Technology Collaboration Evaluation (OTHR) ***Description:*** Project will compare OTHR-specific hardware components and subsystems to determine the component or subsystem offering the best OTHR performance. Project will use this information to develop new prototype components for testing and evaluation. ***FY 2011 Plans:*** Develop test plans and procedures. Begin environmental and architecture assessment studies. ***FY 2012 Plans:*** Conduct equipment assessment and evaluation.	-	0.645	0.855
Title: Reformed Methanol Fuel Cell Power Source (RMFCPS) ***Description:*** This project seeks to provide a hybrid power source capable of 150 watts of continuous power for powering military devices and charging military rechargeable batteries in a small, lightweight package. ***FY 2010 Accomplishments:*** Conduct durability testing and hard tooling design. Begin firmware validation. ***FY 2011 Plans:*** Complete critical design and testing activities.	0.080	0.520	-
Title: Non-lethal Small Boat Stopping ***Description:*** Project will investigate and demonstrate non-lethal stopping of small-boats at greater distances. ***FY 2011 Plans:***	-	0.225	0.225

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603923D8Z: *Coalition Warfare*	PROJECT P923: *Coalition Warfare*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Identify technology and develop system platform. ***FY 2012 Plans:*** Complete system effects testing and sea trials.			
Title: Tactical Edge Data Solutions (TEDS) ***Description:*** Project will enhance data interoperability from the tactical edge by tagging data with C2 Core metadata--as extended from U Core--for access through web services on the Global Information Grid (GIG). ***FY 2011 Plans:*** Conduct first set of lab and operational demonstrations followed by software refinement. ***FY 2012 Plans:*** Conduct second set of lab/operational demonstrations and final assessment.	-	0.300	0.300
Title: Unmanned Aerial Vehicle (UAV) Tasking and Route Planning ***Description:*** Implement the Aircraft Collection Tasking Message (ACTM) messaging standard (NATO STANAG 3277) into TaskView used by aircrew as part of various mission planning systems to ingest and parse Air Tasking Orders (ATO's) and Airspace Coordination Orders (ACO's). ***FY 2011 Plans:*** Refine requirements and engineering approach. Begin ACTM development. Hold preliminary design review and critical design review. ***FY 2012 Plans:*** Conduct formal ACTM qualification testing as well as developmental and operational testing prior to final delivery.	-	0.750	0.791
Title: FY12 Project Selections ***Description:*** Program will conduct competitive nomination process to identify FY12 projects. ***FY 2012 Plans:*** FY12 projects will be selected based on COCOM, Service, Joint Staff, OSD, and DoD Agencies priorities and requirements.	-	-	5.300
Title: Coalition Warfare Program Support ***Description:*** Program funds contractors to support program management.	0.706	0.724	0.516

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603923D8Z: *Coalition Warfare*	PROJECT P923: *Coalition Warfare*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Contractor provided program support. ***FY 2011 Plans:*** Contractor will provide program support. ***FY 2012 Plans:*** Contractor will provide program support.			
Title: Interoperability and Collaboration Initiatives ***Description:*** Program funds interoperability efforts and various initiatives that are aimed at increasing collaboration. ***FY 2010 Accomplishments:*** Interoperability initiatives ***FY 2011 Plans:*** Interoperability initiatives ***FY 2012 Plans:*** Interoperability Initiatives	0.020	0.050	0.044
Title: Anticipated Reductions ***FY 2011 Plans:*** Anticipated FY11 SBIR/STTR transfer, FFRDC adjustment, other administrative transfers, etc. ***FY 2012 Plans:*** Anticipated FY12 SBIR/STTR transfer, FFRDC adjustment, etc.	-	0.895	0.383
Accomplishments/Planned Programs Subtotals	13.094	13.786	12.743

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The Combatant Commands, Services, Defense Agencies, and the Office of the Secretary of Defense nominate candidate projects on an annual basis. CWP provides selected projects one to two years of funding. The Program selects projects that address DoD priorities and meet the needs and requirements specified by the Joint Staff and the Combatant Commanders. Projects should have equitable contributions from international partners, strong potential for transition, and should contribute to allied interoperability and/or meet a user need.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603923D8Z: *Coalition Warfare*	PROJECT P923: *Coalition Warfare*

E. Performance Metrics

After successful completion of the competitive nomination process, initial project funding is dependent on receipt of project documentation, which includes financial information, project plan, description of project team, etc. Continued project funding is dependent on compliance with CWP requirements, which include: adequate progress toward each project's stated goals, timely reporting on financial status and project activities, provision of updated project plans and charts, and progress towards transition goals.

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603923D8Z: *Coalition Warfare*	PROJECT P923: *Coalition Warfare*

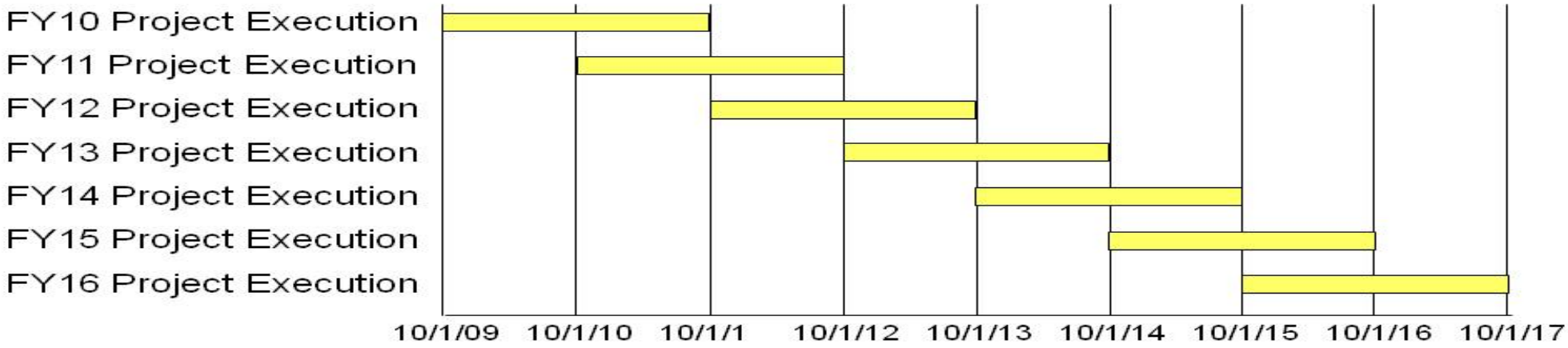

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603923D8Z: *Coalition Warfare*	**PROJECT** P923: *Coalition Warfare*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FY10-FY11 Projects	1	2010	4	2011
FY11-FY12 Projects	1	2011	4	2012
FY12-FY13 Projects	1	2012	4	2013
FY13-FY14 Projects	1	2013	4	2014
FY14-FY15 Projects	1	2014	4	2015
FY15-FY16 Projects	1	2015	4	2016

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604016D8Z: *Department of Defense Corrosion Protection Projects*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	21.895	4.802	3.221	-	3.221	3.792	3.874	3.955	4.103	Continuing	Continuing
P015: *Corrosion Protection Projects*	21.895	4.802	3.221	-	3.221	3.792	3.874	3.955	4.103	Continuing	Continuing

A. Mission Description and Budget Item Justification

(U) The purpose of this program is to develop a comprehensive capability to prevent and mitigate corrosion and its effects on Department of Defense (DoD) weapon systems and infrastructure. Corrosion severely impacts system and facility reliability, readiness and safety, and consumes a disproportionate amount of material and labor hours for repair and treatment of corrosion damaged systems and facilities. The cost of corrosion across the DoD has been estimated at over 23 billion each year. The impact and cost of corrosion are so pervasive that Congress enacted Public Law 107-314 Sec: 1067 [portions codified in 10 U.S.C. 2228]: Prevention and mitigation of corrosion of military infrastructure and equipment. This legislation requires that DoD develop a long-term corrosion strategy to include establishment of a coordinated R&D program with transition plans. The legislation also requires that DoD designate a responsible official or organization to oversee a corrosion prevention and mitigation program. The responsibilities of the Director, Corrosion Policy and Oversight and the Military Department Corrosion Prevention and Control Executives were further delineated in DODI 5000.67 "Prevention and Mitigation of Corrosion on Military Equipment and Infrastructure" of 01 February 2010.

(U) The Deputy Secretary of Defense designated the Principal Deputy Under Secretary of Defense (Acquisition, Technology, and Logistics) (PDUSD(AT&L)) as the DoD Corrosion Executive in May 2003. The DoD Corrosion Executive subsequently established a Corrosion Control and Oversight office to implement the program. Subsequently, in accordance with Section 371 of the 2008 National Defense Authorization Act, the Under Secretary of Defense (USD(AT&L)) designated a Director, Corrosion Policy and Oversight to perform the duties of the DoD Corrosion Executive with responsibilities as described in the 2008 NDAA legislation. A major responsibility of the Director, Corrosion Policy and Oversight is to select high payoff research and development projects that promise to prevent or mitigate corrosion and significantly reduce the total cost of corrosion along with the adverse impact of corrosion effects on weapon system and infrastructure operational capability. This office chartered a Corrosion Prevention and Control Integrated Product Team (CPCIPT) that has selected and funded Operation and Maintenance projects for each Fiscal Year (FY) commencing in FY 2005. However, the DoD CPCIPT has determined that the biggest payoff in corrosion prevention and mitigation will come from investing in up-front prevention technologies, materials, and processes to leverage downstream cost avoidance in corrosion maintenance and repair. Likewise, development of improved predictive and prognostic techniques can eliminate unseen failure and reduce unnecessary maintenance and repair costs. Thus, R&D projects have been selected and funded since FY 2006. The 2009 National Defense Authorization Act added requirements for corrosion executives in each military service and for reports to Congress on inserting corrosion planning into the acquisition process. These funds provide a portion of the funds used to implement associated corrosion R&D projects.

(U) The Corrosion Prevention Control Integrated Product Team membership consists of both the equipment and infrastructure corrosion control experts from the Services, the Joint Staff, the Coast Guard, and the National Aeronautics and Space Administration. The Services are given project guidelines and selection criteria. The CPC project selection board, chaired by the Director, Corrosion Policy and Oversight, reviews the projects and makes recommendations to the USD(AT&L) for final approval.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604016D8Z: *Department of Defense Corrosion Protection Projects*

(U) The former Corrosion Executive issued a policy letter that states: "Basic systems design, materials and processes selection, and intrinsic corrosion-prevention strategies establish the corrosion susceptibility of Defense material. The early stages of acquisition provide our best opportunity to make effective trade-offs among the many competing design criteria. . ." The Congress and former DoD Corrosion Executive made it clear that research and development into materials and methods to prevent or mitigate corrosion should receive high priority. Since Congress has clearly established this program as one of its highest priorities, and has reiterated its expectations regarding funding levels and methods, our budget request is designed to reflect both fiscal realities of one or more on many proposed projects over the next five to ten years.

These projects address critical corrosion issues in both Department of Defense infrastructure as well as warfighting systems. A number of low-risk, high-payoff technologies promise to vastly improve the service life and significantly reduce the maintenance costs of storage tanks and other mission support facilities essential to maintain support for the warfighter. Each of the services has identified important projects that vastly increase operational readiness and reduce operations and maintenance costs. All services are studying corrosion inhibitors that improve reliability and life of electrical and avionics equipment. Likewise, an array of highly effective, rapid cure coatings that are easy to apply and can forestall corrosion for many years on aircraft and ships are being developed. Other vital projects being considered include sealants, wash down systems, sensors and prognostic technologies that have joint service applications and potential to prevent and mitigate corrosion and its effects over a wide range of systems. The FY 2011 budget request will provide a critically needed resource to trigger even larger investment and cost avoidance.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	4.802	4.129	-	4.129
Current President's Budget	21.895	4.802	3.221	-	3.221
Total Adjustments	21.895	-	-0.908	-	-0.908
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	21.895	-	-	-	-
• Defense Efficiency - Contractor Staff Support	-	-	-0.468	-	-0.468
• Defense Efficiency - Report, Studies, Boards and Commissions	-	-	-0.399	-	-0.399
• Defense Efficiency - Baseline Review	-	-	-0.037	-	-0.037
• Economic Assumptions	-	-	-0.004	-	-0.004

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604016D8Z: *Department of Defense Corrosion Protection Projects*

Congressional Add Details ($ in Millions, and Includes General Reductions)

	FY 2010	FY 2011
Project: P015: *Corrosion Protection Projects*		
Congressional Add: *Corrosion Control, Prevention and Prediction through Polymer R&D*	17.400	-
Congressional Add Subtotals for Project: P015	17.400	-
Congressional Add Totals for all Projects	17.400	-

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604016D8Z: *Department of Defense Corrosion Protection Projects*	PROJECT P015: *Corrosion Protection Projects*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P015: *Corrosion Protection Projects*	21.895	4.802	3.221	-	3.221	3.792	3.874	3.955	4.103	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

U) The purpose of this program is to develop a comprehensive capability to prevent and mitigate corrosion and its effects on Department of Defense (DoD) weapon systems and infrastructure. Corrosion severely impacts system and facility reliability, readiness and safety, and consumes a disproportionate amount of material and labor hours for repair and treatment of corrosion damaged systems and facilities. The cost of corrosion across the DoD has been estimated at over 23 billion each year. The impact and cost of corrosion are so pervasive that Congress enacted Public Law 107-314 Sec: 1067 [portions codified in 10 U.S.C. 2228]: Prevention and mitigation of corrosion of military infrastructure and equipment. This legislation requires that DoD develop a long-term corrosion strategy to include establishment of a coordinated R&D program with transition plans. The legislation also requires that DoD designate a responsible official or organization to oversee a corrosion prevention and mitigation program. The responsibilities of the Director, Corrosion Policy and Oversight and the Military Department Corrosion Prevention and Control Executives were further delineated in DODI 5000.67 "Prevention and Mitigation of Corrosion on Military Equipment and Infrastructure" of 01 February 2010.

(U) The Deputy Secretary of Defense designated the Principal Deputy Under Secretary of Defense (Acquisition, Technology, and Logistics) (PDUSD(AT&L)) as the DoD Corrosion Executive in May 2003. The DoD Corrosion Executive subsequently established a Corrosion Control and Oversight office to implement the program. Subsequently, in accordance with Section 371 of the 2008 National Defense Authorization Act, the Under Secretary of Defense (USD(AT&L)) designated a Director, Corrosion Policy and Oversight to perform the duties of the DoD Corrosion Executive with responsibilities as described in the 2008 NDAA legislation. A major responsibility of the Director, Corrosion Policy and Oversight is to select high payoff research and development projects that promise to prevent or mitigate corrosion and significantly reduce the total cost of corrosion along with the adverse impact of corrosion effects on weapon system and infrastructure operational capability. This office chartered a Corrosion Prevention and Control Integrated Product Team (CPCIPT) that has selected and funded Operation and Maintenance projects for each Fiscal Year (FY) commencing in FY 2005. However, the DoD CPCIPT has determined that the biggest payoff in corrosion prevention and mitigation will come from investing in up-front prevention technologies, materials, and processes to leverage downstream cost avoidances in corrosion maintenance and repair. Likewise, development of improved predictive and prognostic techniques can eliminate unseen failure and reduce unnecessary maintenance and repair costs. Thus, R&D projects have been selected and funded since FY 2006. The 2009 National Defense Authorization Act added requirements for corrosion executives in each military service and for reports to Congress on inserting corrosion planning into the acquisition process. These funds provide a portion of the funds used to implement associated corrosion R&D projects.

(U) The Corrosion Prevention Control Integrated Product Team membership consists of both the equipment and infrastructure corrosion control experts from the Services, the Joint Staff, the Coast Guard, and the National Aeronautics and Space Administration. The Services are given project guidelines and selection criteria. The CPC project selection board, chaired by the Director, Corrosion Policy and Oversight, reviews the projects and makes recommendations to the USD(AT&L) for final approval.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604016D8Z: *Department of Defense Corrosion Protection Projects*	**PROJECT** P015: *Corrosion Protection Projects*

(U) The former Corrosion Executive issued a policy letter that states: "Basic systems design, materials and processes selection, and intrinsic corrosion-prevention strategies establish the corrosion susceptibility of Defense material. The early stages of acquisition provide our best opportunity to make effective trade-offs among the many competing design criteria. . ." The Congress and former DoD Corrosion Executive made it clear that research and development into materials and methods to prevent or mitigate corrosion should receive high priority. Since Congress has clearly established this program as one of its highest priorities, and has reiterated its expectations regarding funding levels and methods, our budget request is designed to reflect both fiscal realities of one or more on many proposed projects over the next five to ten years.

These projects address critical corrosion issues in both Department of Defense infrastructure as well as warfighting systems. A number of low-risk, high-payoff technologies promise to vastly improve the service life and significantly reduce the maintenance costs of storage tanks and other mission support facilities essential to maintain support for the warfighter. Each of the services has identified important projects that vastly increase operational readiness and reduce operations and maintenance costs. All services are studying corrosion inhibitors that improve reliability and life of electrical and avionics equipment. Likewise, an array of highly effective, rapid cure coatings that are easy to apply and can forestall corrosion for many years on aircraft and ships are being developed. Other vital projects being considered include sealants, wash down systems, sensors and prognostic technologies that have joint service applications and potential to prevent and mitigate corrosion and its effects over a wide range of systems. The FY 2011 budget request will provide a critically needed resource to trigger even larger investment and cost avoidance.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Corrosion Prevention and Control Projects and Activities	4.495	4.802	3.221
FY 2010 Accomplishments: Coatings and Corrosion Prevention Compounds Diagnostics, Prognostics, Monitoring and NDI Technologies Prediction, Modeling and Supporting Technologies Maintenance and Cathodic Protection Technologies and Practices Materials Selection Processes University initiatives for Corrosion Prevention and Control			
FY 2011 Plans: Coatings and Corrosion Prevention Compounds Diagnostics, Prognostics, Monitoring and NDI Technologies Prediction, Modeling and Supporting Technologies Maintenance and Cathodic Protection Technologies and Practices Materials Selection Processes			
FY 2012 Plans: Coatings and Corrosion Prevention Compounds Diagnostics, Prognostics, Monitoring and NDI Technologies			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604016D8Z: *Department of Defense Corrosion Protection Projects*	PROJECT P015: *Corrosion Protection Projects*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Prediction, Modeling and Supporting Technologies Maintenance and Cathodic Protection Technologies and Practices Materials Selection Processes			
Accomplishments/Planned Programs Subtotals	4.495	4.802	3.221

	FY 2010	FY 2011
Congressional Add: Corrosion Control, Prevention and Prediction through Polymer R&D	17.400	-
FY 2010 Accomplishments: Funding would support a DOD-initated pilot program among four universities, focused on understanding and reducing the premature failure of military assets via corrosion. Overall goal is to develop adequate screening protocols for the early detection and characterization of corrosion failure.		
Congressional Adds Subtotals	17.400	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

There is an annual Corrosion Prevention and Control Integrated Project Team (CPCIPT) call for proposed project plans in April. Projects are submitted by the Services annually in June. The project plan format is contained in the DoD Corrosion Prevention and Mitigation Strategic Plan. Each project plan contains:

1. Problem statement: Description of the problem or situation, including background, history, issues, operational problems and support costs.
2. Impact statement: Details regarding why project is important including description of the operational and/or logistic impact if no action is taken.
3. Technical description: Definition of the corrosion prevention and control objective and description of the system affected by this project; applicable technologies and associated development; expected operations and logistics performance improvement characteristics; brief description of the user community and how it will apply to their mission; and current acquisition status.
4. Risk analysis: Description of the risk in managing/developing/prototyping/ testing/qualifying/manufacturing/completing the technical effort including assumptions that could affect project development or implementation.
5. Proposed phases: If project is complex and will be performed in phases, description of each phase objective.
6. Expected deliverables and results or outcomes: Description of products to be delivered such as type/number of hardware, technical orders/drawings, installation, training, etc.; and description of expected operations and/or logistics performance improvements.
7. Program management: Description of the overall approach and tasks to be taken to accomplish the project, including organization, coordination and acquisition approach.
8. Cost/benefit analysis: Definition of all resources necessary to accomplish project, description of resulting benefits, computation of Return-On-Investment (ROI), documentation of mission criticality, and description of joint applicability.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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9. Schedule: Milestone chart showing all significant events through project completion.
10. Implementation plan: Explanation of how the project will be implemented when completed including a description of the transition approach, and plans to evaluate ROI during the first two years of implementation.

The Corrosion Prevention and Control Integrated Project Team (CPCIPT) receives project plans and engages an evaluation panel to review proposed projects and make recommendations regarding project selection. Projects are also evaluated using Data Envelopment Analysis (DEA) to rank projects by relative efficiency. DEA factors include project performance period, ratio of OSD funding to Service funding, return-on-investment (ROI), degree to which the proposed technology addresses high-cost corrosion problems, potential benefits, and joint service applicability. DEA efficiency scores are provided to the evaluation team to assist in their prioritization of projects for funding. In addition, evaluators consider the following in recommending final priorities:
1. Return on investment credibility: Degree to which there is evidence that the project will achieve an acceptable return on investment
2. Technology maturity: Degree to which proposed technology has been developed or demonstrated and will satisfy project objectives
3. Schedule confidence: Degree to which the project is likely to be completed on time
4. Budget confidence: Degree to which the project is likely to be completed within the proposed budget
5. Management support: Degree to which management actively supports this project and has committed program resources to both manage and support this project
The project priority ranking is finalized and sent to the CPCIPT lead for a final decision.. Upon acceptance and approval of the projects by the CPCIPT, the projects are briefed to the Corrosion Forum. Funding is distributed between the Services based on funding priorities associated with the evaluation process results.

Upon selection by CPCIPT of the highest priority projects and final funding approval, Office of the Secretary of Defense (OSD) transfers individual project funding to the appropriate funding sites that are provided by the Services. After receiving the project funding, the Services are responsible for the funding and management of the projects. OSD retains oversight and direction of the Corrosion Prevention and Control initiative through the CPCIPT. Project oversight includes the review of quarterly status reports which address progress summary, performance goals and metrics and upcoming key events, as well as reports to periodic Corrosion Forums.

The quarterly project report (PR) format has been defined and requires the following input:
1. Statement of progress
2. Outstanding issues
3. Performance goals and metrics
4. Upcoming events
5. Schedule status
6. Current return on investment (ROI) status
These project reports (PRs) are submitted to the CPCIPT. The CPCIPT analyzes project status, progress and project statistics and informs the Service points of contact (POCs) of any project problems. Projects are also required to report verbally at Corrosion Forums, as appropriate.

Corrosion Prevention and Control (CPC) Program direction, control and oversight include the following activities to be performed by staff and support contractors:
1. Plan and schedule Corrosion Forums and oversee Corrosion Forum activities and working Integrated Product Team (IPT) meetings.

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2. Oversee project performance including review of quarterly status reports which address progress summary, performance goals and metrics and upcoming key events, as well as reports to periodic Corrosion Forums.
3. Perform Department of Defense (DoD) cost of corrosion study.
4. Develop improved, standard DoD-wide specifications, standards and qualification processes.
5. Develop corrosion training courses.
6. Prepare and publish Corrosion Prevention and Control Planning Guidebook spirals.
7. Prepare and publish annual Reports to Congress.
8. Update short-term and long-term metrics.
9. Develop corrosion control program management guide for selecting materials.
10. Develop, implement, and update the DoD Corrosion Prevention and Mitigation Strategic Plan.
11. Develop and maintain Roadmaps of IPT activities and accomplishments.
12. Assist in the annual project plan implementation and evaluation process, including the assessment of return on investment associated with proposed projects.
13. Respond to Congressional, Government Accountability Office and DoD inquiries regarding the CPC Program.
14. Perform CPC Program communication and outreach to services, agencies and other organizations.
15. Develop and implement corrosion prevention and control policies applicable for acquisition and sustainment of both weapons systems and infrastructure.
16. Perform reviews of major programs to ensure they are in compliance with corrosion prevention and control policy.
17. Provide oversight of the corrosion programs of the Military Departments and Chair the DoD Corrosion Board of Directors (which includes the Corrosion Control and Prevention Executives from each of the Military Departments).
18. Interact with industry, technical societies, trade associations, government personnel, and foreign allies to identify promising corrosion control technologies and assist in technology transition and insertion

E. Performance Metrics

Not applicable.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604400D8Z: *Unmanned Aircraft Systems Common Development*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	59.463	49.292	25.120	-	25.120	27.388	21.365	18.292	22.924	Continuing	Continuing
P440: *UAS Airspace Integration*	30.663	32.082	24.704	-	24.704	26.957	20.918	17.831	22.447	Continuing	Continuing
P442: *Interoperability*	28.800	17.210	-	-	-	-	-	-	-	Continuing	Continuing
P443: *Unmanned Systems Road Maps*	-	-	0.416	-	0.416	0.431	0.447	0.461	0.477	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Department of Defense (DOD) Unmanned Aircraft Systems (UAS) Common Development is a joint effort to develop and demonstrate common standards, architectures, and technologies that address UAS-specific issues across all Military Services. The intent is to increase interoperability and effectiveness by promoting cooperative development of solutions that are applicable across major classes of UAS. This effort will initially focus on addressing DOD UAS integration into the National Airspace System (NAS) and demonstration of a common, interoperable ground station architecture and associated interface standards.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	55.289	49.292	28.391	-	28.391
Current President's Budget	59.463	49.292	25.120	-	25.120
Total Adjustments	4.174	-	-3.271	-	-3.271
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense Efficiency - Baseline Review	-	-	-0.255	-	-0.255
• Defense Efficiency - Report, Studies, Boards and Commission	-	-	-2.744	-	-2.744
• Defense Efficiency - Contract Staff Support	-	-	-0.234	-	-0.234
• Economic Assumptions	-	-	-0.038	-	-0.038
• Other Program Adjustments	4.174	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P443: *Unmanned Systems Road Maps*		

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604400D8Z: *Unmanned Aircraft Systems Common Development*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Congressional Add: *None*	-	-
Congressional Add Subtotals for Project: P443	-	-
Congressional Add Totals for all Projects	-	-

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P440: *UAS Airspace Integration*	30.663	32.082	24.704	-	24.704	26.957	20.918	17.831	22.447	Continuing	Continuing
Quantity of RDT&E Articles											

Note

PE 0305220N: RQ-4 UAV (BAMS UAS) contains additional funding for the common GH/BAMS ABSAA development. The Navy BAMS UAS program office is managing the common GH/BAMS ABSAA development.

A. Mission Description and Budget Item Justification

In FY2012 the Department plans to transition from the U-2 to the Global Hawk (GH), but today's restrictions on airspace access preclude this. GH and the Broad Area Maritime Surveillance (BAMS) UAS, also an RQ-4 aircraft, need an autonomous, sense-and-avoid (SAA) as an alternate means of compliance to Title 14 Code of Federal Regulations, Part 91.113, requirement to see-and-avoid other aircraft. MQ-1 Predator, MQ-1C Gray Eagle, and MQ-9 Reaper have similar requirements for SAA capability; their SAA technology development will leverage the GH/BAMS technology. Development of a Ground Based Sense-and-Avoid (GBSAA) system using existing technology can provide a near-term solution for improved airspace access, both for terminal operations (e.g., Beale AFB, GH transit to/from controlled airspace) and for operations/training within the GBSAA system's coverage area (e.g., Gray Eagle at El Mirage, Shadow operations at Cherry Point).

Provides joint funding for the BAMS and GH programs to accelerate the development of a common onboard, autonomous SAA (ABSAA) capability (one upon which a similar SAA system for Predator, Gray Eagle and Reaper can be based). BAMS program is the lead for the ABSAA development. Also, provideds a GBSAA capability to meet DoD training and operational objectives at locations where airspace restrictions currently limit training and operations, and establishes dedicated funding to develop standards, modeling and simulation tools, and technology to enable DoD UAS to routinely access the national and international airspace systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Unmanned Aircraft System Airspace Integration Initiatives	30.663	32.082	24.704
Description: Starting in FY2010 the Department's sense-and-avoid (SAA) developmental efforts are enhanced by this defense-wide program element. This program provides joint funding to accelerate the development of ABSAA systems and standards to enable UAS to routinely access the national and international airspace systems, and provides a GBSAA solution for improved airspace access in the near-term. This program also develops modeling and simulation tools needed to validate the systems and standards.			
FY 2010 Accomplishments: ABSAA - Completed Multiple Intruder Autonomous Avoidance Phase 3 development and flight demonstration activities using UAS surrogate aircraft and a surrogate radar sensor as risk reduction for new radar development. This included hardware sensor development, integration and test, sensor software development coding and test, and data development.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604400D8Z: *Unmanned Aircraft Systems Common Development*	**PROJECT** P440: *UAS Airspace Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
ABSAA - Phase 0 Extension - Analyzed existing Global Hawk technical baseline and identify potential integration solutions and potential risks/issues. Conducted Co-Site EMI Assessment for Global Hawk of ABSAA hadware components. Developed "Use Cases" derived from continued requirements decomposition and use of USG provided ConEmp. Continued enhancement and refinement of DoDAF artifacts. Conducted initial integration planning toward testing in surrogate and RQ-4 aircraft. Developed Requirements Verification/Validation Plan. ABSAA Phase 1A - Initiated development of a Critical Design Review (CDR) for a common, autonomous ABSAA system that satisfies common requirements of the United States Air Force (USAF) Global Hawk (GH) and United States Navy (USN) Broad Area Maritime Surveillance (BAMS) Unmanned Aircraft Systems (UAS) that is scalable to medium-altitude UAS. The ABSAA system will provide a common, and modular, hardware and software solution for integration onto GH and the BAMS UAS. The integration effort will be implemented during the next phase ("Phase 1B"). Standards Development - Initiated the development of airworthiness criteria, standards, and methods of compliance for both fixed and rotary wing UAS (GCS and links included) to enable UAS to more routinely access the NAS with less operational restrictions. These criteria, standards, and methods are being prepared for incorporation into MIL-HDBK-516. Conducted an Analysis of Alternatives (AoA) to determine the best safety approach for providing a comprehensive assessment of the risks associated with unmanned aircraft system (UAS) operations in the National Airspace System (NAS). Tailored the recommended safety approach for Terminal Area Operations so as to align with the DoD Airspace Integration Plan and assist the ongoing Ground Based Sense and Avoid (GBSAA) effort. In response to guidance provided by the National Aeronautics Research and Development Plan, published by the National Science and Technology Council, conducted several workshops, performed analysis and derived a Target Level of Safety (TLS) for UAS. Performed requirements analysis to identify, develop, and document the performance requirements for UAS operations in the Terminal Area Profile of the Airspace Integration Plan, which includes airspace Classes C, D, E, and G. Coordinated performance requirements development within appropriate standards development organizations. Conducted a UAS Standards Gaps analysis to identify UAS-specific industry standards required for successful integration of UAS into the NAS. Modeling & Simulation (M&S) - Provided Modeling, Simulation and Analysis (MS&A) for the requirements, standards, and safety efforts previously mentioned. Specifically developed an MS&A Evaluation Plan, MS&A Data Analysis Plan, MS&A Support Plan, and initiated the M&S Roadmap and Investment Plan. Developed implementation processes, measures and guidance for any DoD UAS basing location.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604400D8Z: *Unmanned Aircraft Systems Common Development*	PROJECT P440: *UAS Airspace Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
GBSAA –Developed prototype GBSAA Self-Separation System consisting of sensors, data networks, communications, avoidance logic and a user interface which was successfully employed at El Mirage, CA. Following a deliberate process with US Army airworthiness authorities, issued an Airworthiness Certificate for ERMP Sky Warrior to conduct night flights using GBSAA to replace observers/chase planes, thus validating GBSAA as a mitigation, or an alternate means of compliance, to the "see and avoid" requirement levied in CFR Part 91.113. Conducted successful daytime demonstration of the GBSAA system to the FAA. Submitted a COA request and Safety Case to FAA for use of GBSAA for UAS night flights at El Mirage. Established baseline requirements for a GBSAA System to include: sensors, operator interface, tracker, algorithms, and system network and communications. Developed repeatable process for the installation, testing, qualification, and employment of a GBSAA system. Developed documents (CONEMP, Requirements, Operational Procedures, Airspace Characterization, Operational Safety Assessment) to serve as templates to standardize and expedite other SAA efforts. Established a standard safety case process for implementation and approval of GBSAA, and held a collaborative workshop with all Military Services, NASA, and academia. Enabled joint development and demonstration of common standards, architectures and technologies that address UAS-specific issues across all Military services. Also collaborated with the Department of Homeland Security (CBP and U.S Coast Guard) in order to share knowledge of GBSAA lessons-learned to facilitate adoption of standards being developed. Successfully developed and demonstrated a prototype SAA Test Bed (TB).			
FY 2011 Plans: ABSAA - Complete Multiple Intruder Autonomous Avoidance Phase 4 development and flight demonstration activities using UAS surrogate aircraft and a new radar sensor, maturing the system to TRL 6. This includes hardware sensor development, integration and test, sensor software development coding and test, and data development. ABSAA - Phase 1A - This CDR effort will leverage the joint GH/BAMS operational, functional, and hazard analyses from the "Phase 0" effort to support the definition of the SAA technical requirements for the RQ-4 aircraft. ABSAA includes an integrated suite of sensors, decision logic algorithms, data recording, pilot displays, and prognostics & health management (P&HM) necessary to manage collision risk to an acceptable level of safety across the expected range of operational scenarios and mission environments for the RQ-4 UAS. An acceptable level of safety for the ABSAA system will be established through comprehensive system and operational safety analysis, modeling, simulation and test. These activities and associated analyses will result in design trades that will optimize system performance to achieve an acceptable level of safety, and to satisfy requirements for DoD compliance and operational approval. Standards Development - Develop airworthiness criteria, standards, and methods of compliance for both fixed and rotary wing UAS (GCS and links included) for incorporation into MIL-HDBK-516. Develop a consistent methodology across all Military Services for determining an appropriate Third Party Target Level of Safety (3PTLS) methodology for calculating accepted risk			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

to third parties on the ground due to a potential UA crash in a populated area. Tailor the safety assessment for additional UAS Profiles to include lateral and vertical transit operations. Perform requirements analysis to identify, develop, and document the performance requirements for UAS lateral and vertical transit operations within Classes A, C, D and E airspace as defined in the DoD Airspace Integration Plan. Coordinate performance requirements development within appropriate standards development organizations (SDOs). Develop a UAS Standards Development Plan that defines how the necessary UAS standards gaps will be closed. Generate and publish new UAS technical standards as identified and prioritized in the Standards Gaps Analysis with initial focus on Terminal Area Operations.

Modeling & Simulation (M&S) - Provide MS&A to the proposed FY11 requirements and standards efforts as well as the safety analysis activities. Complete the FY11 M&S Roadmap and update the MS&A Evaluation Plan, MS&A Data Analysis Plan, and MS&A Support Plan. Develop new and update previous implementation processes, measures, and guidance for DoD UAS operators to use at all DoD UAS basing locations.

GBSAA – Phase 1: Develop, verify, and validate incremental improvements for Phase 1 of Self-Separation such as data correlation/fusion capability and initial maneuvering in airspace with other aircraft. Phase 2 Self-Separation development: define, develop and test maneuver algorithm requirements, perform optical sensor trade studies, analysis of projection algorithm uncertainty, a data fusion requirements study, development of an improved user interface, and initial integration with the GCS. Test and validate additional radars (ASR-9/ASR-11) for wide-area GBSAA functionality and applicability. Perform analysis and determine key criteria for common SAA displays. Conduct testing, verification, validation for both ABSAA and GBSAA,to include optimization of SAA systems and their interfaces, including those to air vehicles and ground stations. Develop and publish GBSAA System Qualification Criteria. Support initial assessments of new site requests from across DoD. Facilitate the implementation of GBSAA at additional sites in accordance with the standard process developed previously. Conduct collaborative workshops to enable joint development and demonstration of common standards, architectures and technologies that address UAS-specific issues across all Military Services.

FY 2012 Plans:

ABSAA - Initiate planning to develop ABSAA through the CDR. Build, test, and fix Autonomous ABSAA software to support a sucesssful CDR.

Standards Development - Complete the update of MIL-HDBK-516 for airworthiness criteria, standards, and methods of compliance for both fixed and rotary wing UAS. Tailor the safety assessment for additional UAS Profiles to include dynamic operations. Perform requirements analysis to identify, develop, and document the performance requirements for routine UAS operations in all classes of airspace to include dynamic operations. Coordinate the performance requirements developed within

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604400D8Z: *Unmanned Aircraft Systems Common Development*	PROJECT P440: *UAS Airspace Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
appropriate standards development organizations. Generate and publish new UAS technical standards as identified and prioritized in the Standards Gaps Analysis. Provide an updated Standards Gaps List and Standards Development Plan based on progress from FY11. Modeling & Simulation (M&S) - Provide MS&A to the proposed FY12 safety, requirements and standards efforts as well as the safety analysis activities. Update the M&S Roadmap, MS&A Evaluation Plan, MS&A Data Analysis Plan, and MS&A Support Plan. Develop new and update previous implementation processes, measures, and guidance for DoD UAS operators to use at all DoD UAS basing locations. GBSAA – Design, test and implement Phase 1 technology upgrades as required. Demonstrate GBSAA Phase 2 prototype capability. Incrementally improve all component capabilities including: sensors, tracker, correlation/fusion, network and communications, maneuver algorithms, and user interfaces. Refine repeatable and validated process as necessary to incorporate test results, lessons learned, and trade study results. Collaborate with all Military Services to evaluate sensor, fusion, algorithm evaluation and operator Interfaces. Conduct collaborative workshops to enable joint development and demonstration of common standards, architectures and technologies that address UAS-specific issues across all Military Services. Begin deliberate planning for GBSAA Phase 3, which is the integration of GBSAA and ABSAA in order to realize unfettered access to the NAS by UAS. Coordinate and conduct initial Phase 3 assessments.			
Accomplishments/Planned Programs Subtotals	30.663	32.082	24.704

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604400D8Z: *Unmanned Aircraft Systems Common Development*	PROJECT P442: *Interoperability*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P442: *Interoperability*	28.800	17.210	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

Note

FY2010 includes a $6 million congressional add.

A. Mission Description and Budget Item Justification

The UAS Common Ground Station Demonstration project will develop and demonstrate an interoperable, standards-based, open ground station architecture for MQ-1 (Predator/Gray Eagle), MQ-5 (Hunter), MQ-8 (Fire Scout), and MQ-9 (Reaper) UAS. The intent is to improve joint- and coalition-interoperability and to promote competition through the implementation of open standards and open architectures.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: UAS Common Ground Station Demonstration	28.800	17.210	-
Description: Develop and demonstrate an interoperable, standards-based, open ground station architecture for MQ-1 (Predator/Gray Eagle), MQ-5 (Hunter), MQ-8 (Fire Scout), and MQ-9 (Reaper) UAS. The intent is to improve joint- and coalition-interoperability and to promote competition through the implementation of open standards and open architectures.			
FY 2010 Accomplishments: Completed scheduled release of versions 0.5 and 1.0 of the architecture software focusing on data standards and data flow. Developed and completed a plan with an initial subset of services that will be demonstrated as a representative sample of GCS collaboration with industry. Developed an Open Business Model (OBM) that represents a different government approach to creating services for use by the Military Services, third parties, and vendors. Developed a USIP conformance certification process certified by the JROC that establishes a “custodial path” for documents to ensure validation and publication into the DISR.			
FY 2011 Plans: Develop an “Open” approach to the v2.0 software plan. Transition scheduled projects to Programs of Record and user communities. Develop “3rd Party” vendor Integration Plan to reach out to additional vendors to develop services for future use. Establish a path forward that allows Industry partners an opportunity to develop and share intellectual property through a body comprised of a federation of industry representatives within the OBM.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604400D8Z: *Unmanned Aircraft Systems Common Development*	PROJECT P442: *Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Develop Interoperability Roadmap based on top down capabilities assessment. Conduct a review of remote video terminals and develop a plan for prototyping a government-owned “best of breed” version that can be released to vendors for open competition.			
Accomplishments/Planned Programs Subtotals	28.800	17.210	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

n/a

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604400D8Z: *Unmanned Aircraft Systems Common Development*	PROJECT P443: *Unmanned Systems Road Maps*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P443: *Unmanned Systems Road Maps*	-	-	0.416	-	0.416	0.431	0.447	0.461	0.477	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This effort supports the Department's Unmanned Systems Roadmap and updates. The Unmanned Systems Roadmap provides a DoD vision for the continuing development, fielding and employment of unmanned systems technologies. This roadmap defines a common vision, establishes the current state of unmanned systems in today's force, and outlines a strategy for the common challenges that must be addressed to achieve the shared vision. Funding for this effort was previously contained within P440 and P442 of this Program Element.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Unmanned Systems Roadmap	-	-	0.416
Description: Develops the Department's Unmanned Systems Roadmap and updates. ***FY 2012 Plans:*** Update the Department's Unmanned Systems Roadmap and perform related studies supporting the Department's vision for unmanned systems.			
Accomplishments/Planned Programs Subtotals	-	-	0.416

	FY 2010	FY 2011
Congressional Add: None	-	-
FY 2010 Accomplishments: N/A		
Congressional Adds Subtotals	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Provide up to date Unmanned Systems Roadmap providing a DoD vision for the continuing development, fielding and employment of unmanned systems technologies.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	10.715	-	-	-	-	-	-	-	-	Continuing	Continuing
P649: *JCTD*	10.715	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY 2011, funding is transferred from the Joint Capability Technology Demonstration (JCTD) BA4 PE and Defense Acquisition Executive (DAE) Pilot programs into the JCTD BA3 PE. The JCTD BA4 PE and DAE BA5 Pilot program PEs end.

Today's operations require even faster delivery of new capabilities. Therefore, the JCTD Program was revised in FY 2010 to accelerate project selection, capability demonstration of more short projects (one year or less) and fewer long projects (two to three years), and delivery rate of new capabilities. This new process includes: improved synchronization with U.S. Combatant Commands (COCOM) experimentation, streamlined project approval and initiation, clear 1-year deliverables and decision points for projects greater than a year in duration; and annual reviews of ongoing JCTDs to assess deliverables and continuation of the project.

A. Mission Description and Budget Item Justification

The purpose of the JCTD BA4 Transition Program was to:
- Establish a "Transition Arm" to incorporate dedicated funding outside S&T to enhance the successful transition of JCTD projects to Programs of Record.
- Provide a venue to methodically facilitate transition of successful technologies beyond initial demonstration phase and into early acquisition.
- Continue the maturity and fielding of the most successful JCTDs that have proven operational utility and COCOM deem critical for joint warfighting capabilities.

A small portion of the funding under the newly combined JCTD BA3 PE in FY 2011 and beyond will be reserved for these same purposes.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	10.988	-	-	-	-
Current President's Budget	10.715	-	-	-	-
Total Adjustments	-0.273	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.256	-			
• Other Program Adjustments	-0.017	-	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*

Change Summary Explanation

In FY 2011, the JCTD Transition funding will be transferred to the JCTD BA3 PE 0603648D8Z.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	PROJECT P649: *JCTD*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P649: *JCTD*	10.715	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

Note

In FY 2011 funding is transferred from the Joint Capability Technology Demonstration (JCTD) BA4 PE and Defense Acquisition Executive (DAE) Pilot programs into the JCTD BA3 PE. The JCTD BA4 PE and DAE BA5 Pilot program PEs end.

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A. Mission Description and Budget Item Justification

The purpose of the JCTD BA4 Transition Program was to:
- Establish a "Transition Arm" to incorporate dedicated funding outside S&T to enhance the successful transition of JCTD projects to Programs of Record.
- Provide a venue to methodically facilitate transition of successful technologies beyond initial demonstration phase and into early acquisition.
- Continue the maturity and fielding of the most successful JCTDs that have proven operational utility and COCOM deem critical for joint warfighting capabilities.

A portion of the funding under the newly combined JCTD BA3 PE in FY 2011 and beyond will also be reserved for these purposes.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Critical Runway Assessment and Repair (CRATR)	1.700	-	-
Description: The Joint Requirements Oversight Council (JROC) validated the capability need for CRATR in FY 2008. CRATR's objective is to develop the capability to conduct rapid airfield damage assessment, determine the minimum airfield operating surface required, identify unexploded ordnance, and repair runway damage to enable critical airfields to rapidly return to operation. The CRATR JCTD evaluated existing, new and commercial technologies and procedures, and integrated the most successful of these technologies and procedures to develop both material and equipment solutions. The primary outputs and efficiencies are: 1) Successful solutions from early demonstrations were used to create an interim modular repair kit which formed the Spiral One capability for theater; 2) After a successful final demonstration, products from the CRATR QRF/JCTD will be packaged into a final modular repair kit that will transition to the U. S. Air Force (USAF) Airfield Damage Repair (ADR) program. CRATR was sponsored by U.S. Pacific Command (USPACOM). Lead service is the USAF. Air Combat Command is the Transition Manager.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	PROJECT P649: *JCTD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Conducted live aircraft test in Continental United Stated (CONUS) during final operational utility assessment. Completed final assessment report, finalized Concept of Operations (CONOPS) documentation and sent residuals with operational utility to forward-based airfields. Conducted System Development and Demonstration (SDD) and transition to ADR Program of Record. Completed the JCTD.			
Title: Hyperspectral Collection and Analysis System (HyCAS) ***Description:*** The Hyperspectral Collection and Analysis System (HyCAS) was validated by the JROC in FY 2002. Spectral Airborne Reachback Cell (SPARC) delivers a 2nd/3rd phase high resolution imagery (HSI) exploitation cell by leveraging and expanding the National Air and Space Intelligence Center (NASIC) infrastructure to support 20 HSI analyst workstations, data archive, and tasking, processing, exploitation and dissemination software. HyCAS also provides in-depth material identification and spectral anomaly detection analysis that is so crucial to Overseas Contingency Operations (OCO). HyCAS capabilities represent a quantum leap forward in the management of hyperspectral data. The airborne hyperspectral concept is an integration effort which will deliver four Air Force Compact Airborne Spectral Sensors (AF COMPASS), four real-time processors and four ground station processing software packages to the Predator Unmanned Aerial Vehicle (UAV) program of record. AF COMPASS is a tactical asset designed to operate at an altitude of 15-20K feet with area coverage of approximately 600-900 sq km/hour. AF COMPASS provides a wide area search capability and can cross-cue the onboard Predator Multispectral Targeting System (MTS). The airborne hyperspectral capability will enhance the effectiveness of the Predator weapon system by finding targets and queuing the MTS ball to fix an object for tracking, targeting and engagement. The AF COMPASS sensor can also detect, locate and identify materials associated with Combat Search and Rescue (CSAR) operations and can distinguish between targets and decoys. AF COMPASS ground station processing software allows an operator to view HRI chips based on either signature or anomaly detections. Chips are painted on a display which shows the path of the aircraft and the signature anomaly hits obtained by the real-time processor. ***FY 2010 Accomplishments:*** HyCAS used a two-pronged approach for extended use of residual capability. Follow-on funded effort for four additional HyCAS sensors and exploitation capability is planned for the outyears. Targeted Programs of Record: Predator Unmanned Aircraft System and Distributed Common Ground Systems.	3.800	-	-
Title: Joint Enable Theater Access - Sea Ports of Debarkation (JETA-SPOD) ***Description:*** The JROC validated the need for JETA-SPOD capabilities in FY 2006. JETA-SPOD objective is to develop and demonstrate: a Lightweight Modular Causeway System (LMCS) transportable by and employable from intra-theater sealift vessels	0.450	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	PROJECT P649: *JCTD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
such as the Joint High Speed Vessel (JHSV) or other current Army/Navy watercraft; and an austere port Decision Support Tool for selection of optimal sites from multiple austere SPOD options. The capabilities developed in this Advanced Concept Technology Development (ACTD) optimize the use of the JHSV, current Army/Navy watercraft, and Vessel-to-Shore bridging requirements by providing an increased flow of combat power and sustainment through multiple theater austere seaport locations. This provides Joint/Combined Force (J/CFC) commanders a means to mitigate threat anti-access activities and increases flexibility to conduct operational maneuver from strategic distances. JETA-SPOD ACTD is sponsored by U.S. Pacific Command (USPACOM), with development and demonstration completed in FY 2008. The Decision Support Tool with Final Data Set transitioned to U.S. Transportation Command (TRANSCOM) in FY 2008. Lightweight Modular Causeway System (LMCS) technology is transitioning to the Army as part of the Vessel-to-Shore Bridging Cpability Development Document (CDD), approved by the Army in FY 2009. The lead service is U.S. Army. The primary outputs and efficiencies are: 1) LMCS weight, volume, and deployment time reductions compared to existing military causeway and bridging systems; 2) the operational parameters for evaluating the military utility of the LMCS are based on a quantitative and qualitative comparison to the capability provided by the existing Modular Causeway System (MCS); 3) LMCS reduction in weight and volume by 50% over the MCS; a reduction in deployment time by 50% over the MCS; and elimination of in-water connections; 4) the Decision Support Tool capability equates to an increase in availability of throughput prediction information for 50-80% of worldwide small ports; and 5) the combination of LMCS and the Decision Support Tool includes a five-fold increase in the number of JHSV-compatible ports and doubling of the port throughput rate. The transition strategy for LMCS and the Decision Support Tool is to transition to Programs of Record under the guidance of two Transition Managers: Product Director, Army Watercraft Systems (PD AWS) and USTRANSCOM, respectively. ***FY 2010 Accomplishments:*** Delivered pre-transition and interim capability/residuals to the user (included LMCS system and Decision Support Tool with Final Data Set); planned the use of LMCS and Decision Support Tool in exercises for continued refinement and continued socialization for transition. JETA-SPOD ACTD completed.			
Title: Joint Multi-Mission Electro-Optical System (JMMES) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for JMMES in FY 2007. The objective of JMMES is to demonstration and transition airborne sensors and automated processing for automatic detection of items of interest for Joint Service, Coalition, and Interagency partners. JMMES will demonstrate use of advanced multi-spectral sensors in an aircraft turret compatible with existing turret mounts in US Navy, US Army, Drug Enforcement Agency, and British and Canadian aircraft, as well as future planned unmanned air systems. The project will develop and demonstrate automatic	1.250	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	PROJECT P649: *JCTD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
processing and automated operator cueing for targets such as submarines, mines, targets under trees, illicit crops, and search-and-rescue targets at sea. The primary outputs and efficiencies are: (1) ability of JMMES to recognize targets of interest, in terms of (a) percent of auto detections and auto cues that are relevant, (b) distance error of auto detect and auto cue reports, (c) timeliness of reports (seconds) to decision makers; and (2) ability of JMMES to defeat denial and deception efforts, in terms of (a) percent of denial and deception efforts defeated, (b) where and when JMMES applies (operating environments, seasons, time of day, range, etc.), (c) percent of time operable during missions, and (d) reliability and logistic supportrequirements. JMMES is sponsored by U.S. Pacific Command (PACOM) and U.S. Special Operations Command (SOCOM). Transition activities began in FY 2007, leading to likely transition to program of record in FY 2012, a two-year slip in original program of record plan. Budget Activity (BA4) provided a funding bridge to the Navy transition Program of Record in FY 2012. The lead Service is U.S. Navy. ***FY 2010 Accomplishments:*** Completed documentation needed for Program of Record transition to Navy PEO(U&W) PMA-266 Firescout unmanned platform. Progressed on development of a JMMES High Altitude ASW Capability (HAASW). Installed and sustained JMMES residual in selected commercial aircraft as risk reduction to future P-8A, MH-60R, and MQ-8B.			
Title: Large Data ***Description:*** The JROC validated the capability need for Large Data in FY 2006. Large Data demonstrated the military utility of a highly scalable, rapid, and secure integrated capability to retrieve, store and share massive amounts of information effectively between globally distributed users. It provides increased situational awareness by displaying large, fused sets of geospatially-referenced data in a Joint Warfighting context using intuitive user data set navigation techniques. The primary outputs and efficiencies were: 1) Synchronization of databases across all major operational storage nodes, i.e. cache coherency; 2) Timely delivery and sharing of data - instant real time access and collaboration; 3) Intuitive ways for users to navigate large (petabytes to exabytes) data sets; 4) Ability to easily visualize huge amounts of data generated; 5) Capability to perform "trackback" or change analysis on an unprecedented scale. The sponsor was U. S. Strategic Command (USSTRATCOM). The lead agencies were the National Geospatial Agency (NGA) and Defense Information Systems Agency (DISA). Transition occurred in FY 2009 to NGA and DISA. ***FY 2010 Accomplishments:*** Execution of the Transition Strategy: U.S. Forces Korea (USFK) leadership support has accelerated Army (Intelligence and Security Command (INSCOM) plans to transition Large Data to the Distributed Common Ground System (DCGS-A) Fixed Program of Record. Early acceptance testing with Joint IImporvised Explosive Device (IED) Defeat Organization (JIEDDO) and Army stakeholders led to Army G2 funding the Large Data RoadRunner program to accelerate exploitation of wide area persistent	1.175	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	PROJECT P649: *JCTD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
surveillance (WAPS) data for OIF/OEF. In parallel, Large Data team successfully demonstrated global, cloud computing services to accomplish data virtualization with inherent failover and recovery. This critical transition milestone followed an early delivery of web service-based Large Data updates to the Integrated Strategic Planning Analysis Network (ISPAN) Global Situational Awareness Tool (GSAT), and secured USSTRATCOM endorsement of the Large Data Transition Plan. Residual support provided to USFK, National Air and Space Intelligence Center (NASIC), and NGA. Transition components were delivered to NGA.			
Title: Mapping the Human Terrain (MAP-HT) ***Description:*** The Joint Requirements Oversight Council (JROC) validated the capability need for MAP-HT in FY 2007. The MAP-HT JCTD demonstrated the capability to collect, store, process, analyze, visualize, and disseminate human domain information in support of tactical operations. MAP-HT software includes geospatial, temporal, link, and socio-cultural analysis tools, and web/ enterprise services. MAP-HT hardware includes the Multi-Function Workstation (MFWS), the Collaborative Civil Considerations Knowledge Enterprise (C3KE) Server Suite and a Collection Tool. The user sponsor is U.S. Central Command (USCENTCOM). MAP-HT is transitioning civil and socio-cultural data elements to Product Managers Distributed Common Ground System-Army (PM DCGS-A) into the mainline DCGS-A MFWS and its application framework and it's collection enhancements within the Tactical Ground Reporting System (TiGR) interface to PM Force Battle Command Brigade and Below (FBCB2). Commanders in theater requiring human domain analysis in their decision making process have greatly benefited from the early transition and implementation of MAP-HT in Operation enduring Freedom (OEF) and Combined Joint Task Force-Horn of Africa (CJTF-HOA). ***FY 2010 Accomplishments:*** Deployed to US Forces Afghanistan (USFOR-A) and achieved Information Assurance certification and accreditation in CJTF-HOA, Iraq and Afghanistan. Provided support for integration, installation and sustainment of the MAP-HT software, Mobile Training Teams, Software Licenses and additional hardware. Sustained the unclassified human terrain portal and human domain toolkits associated training of users. Provided Hardware/Software (HW/SW) refresh for the interim fielded capabilities and sustainment of residuals. Completed final Operational Utility Assessment of the deployed system. JCTD completed.	1.100	-	-
Title: Regional Maritime Awareness Capability (RMAC) ***Description:*** The JROC validated the capability need for RMAC in FY 2006. RMAC was a coordinated DoD and Department of State project to build maritime awareness capacity for friendly nations. RMAC demonstrated and transitioned a regional maritime awareness solution set consisting of sensors and their indigenous processors, communications systems, and software, suitable for nations with little or no previous maritime awareness capability. The initial application enables friendly nations in the Gulf of Guinea to develop maritime domain awareness in the regional waters, and share their data with each other and with the United States (U.S.). This solution set is equally applicable to local sensor sites, national operations centers, regional coordination centers, and external users. The sensors and processors include Automated Information System (AIS), surface search radars,	0.295	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	PROJECT P649: *JCTD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
video cameras, and night vision devices. Communications are done through Ultra High Frequency/Very High Frequency (UHF/ VHF) Radios, World Wide Web Consortium (W3C)-compliant, commercially secure, Internet Protocol (IP)-based networks and cell phones. RMAC's outputs and efficiencies include surveillance, tracking, fusion and analysis, vessel tracks, and multi national information sharing and collaboration capabilities. The current Transition Strategy delivers: 1) Residuals: AIS, radars, video cameras, night vision devices, radios, cell phones; 2) Documentation: training package, software / hardware specifications, site surveys, frequency management plan and user maintenance manuals, CONOPS/Tactical Transition Plan (TTP); 3) Post-JCTD acquisition strategies for procurements of capability developed by host nations and U.S. Program Managers. The User Sponsor is the U. S. European Command (USEUCOM) and the lead service is the U.S. Navy. ***FY 2010 Accomplishments:*** Leveraged Theater Security Cooperation success of RMAC in Africa, particularly the strategic Gulf of Guinea region, by establishing remote maintenance coordination capability, installing relevant software upgrades from U.S. programs of record, and conducting emergency service response. Conducted periodic in-country refresher training. Coordinated RMAC activities with USEUCOM Theater Security Cooperation plan.			
Title: Smart Threads Integrated Radiation Sensors (STIRS) ***Description:*** The JROC validated the capability need for Smart Threads Integrated Radiological Sensors (STIRS) in FY 2007. STIRS demonstrated military utility to detect, identify, and disseminate radiological information on land, maritime, and airborne environments in order to enhance combating weapons of mass destruction operations. The capability suite uses a combination of proven and innovative radiation detection capabilities, networked through open- architectures, to aid in counter-proliferation and consequence management missions. These capabilities have global applicability with forward-deployed Combatant Command (COCOM) ground forces (U.S. Army - 20th Support Command), U.S. Naval Maritime Components, and U.S. Coast Guard elements in the transient areas. STIRS was sponsored by the U.S. Northern Command (NORTHCOM); Defense Threat Reduction Agency (DTRA) was Lead Agency. The U.S. Naval Sea Systems Command (NAVSEA O4LR) and the Joint Program Executive Office for Chemical and Biological Defense (JPEO CBD) were co-Transition Managers. The operational demonstration (ODX) phases were completed in late FY 2009 and the JCTD was completed in 2010. ***FY 2010 Accomplishments:*** Began extended use activities with the STIRS JCTD residuals at the 20th Support Command. Coordinated transition activities with JPEO CBD to transition of STIRS JCTD capabilities to applicable joint Programs of Record.	0.300	-	-
Title: Tactical Service Provider (TSP)	0.645	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	**PROJECT** P649: *JCTD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The JROC validated the capability need for the TSP JCTD in FY 2007. The objective was to demonstrate and accelerate fielding of a seamlessly integrated broadband Satellite Communications (SATCOM) and mobile-wireless environment for extension of network services to the tactical user. The TSP JCTD addressed the issues of "first tactical mile" support to mobile troops via rapid implementation of expandable data networks through emerging next-generation high data rate, bi-directional Global Broadcast Services (GBS) 'at the Halt' or 'at the Pause' extended to hand-held devices for delivery of large data sets that require wide bandwidth. The TSP JCTD uses a hybrid architecture of emerging, standards-based satellite communications and wireless technologies. As integrated in the TSP JCTD, these technologies robustly support the use of commercial, DoD-tactical, and emerging net-centric enterprise service applications in a mobile tactical environment. With utility proven in USCENTCOM's capstone Military Utility Assessment (MUA) in July 2009, the USCENTCOM Deputy Commander recommended that TSP technologies transition into Service Programs of Records to support operations in the USCENTCOM Area of Operations. ***FY 2010 Accomplishments:*** Transitioned TSP broadband SATCOM capabilities into the formal acquisition process supporting the GBS Program of Record. FY10 deliverables included: software and hardware specifications tailored to next generation GBS acquisition; CONOPS and CONEMP inputs relative to TSP-explored GBS P3I; the technical transition Plan; acquisition program business plan for technical transition; a detailed test-plan to support P3I-acquisition by the GBS Program of Record; and draft technical inputs to the GBS Test and Evaluation Master Plan (TEMP).			
Accomplishments/Planned Programs Subtotals	10.715	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0603648D8Z: *JCTD BA3*	200.965	195.537	198.276		198.276	201.211	205.235	209.340		Continuing	Continuing

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

The majority of funding from this Program Element was forwarded to the Services/Defense Agencies that execute the individual JCTD projects. RFD maintains and provides overall programmatic oversight for the JCTD program, to include the individual JCTD projects. The JCTD performance metrics center on how fast relevant, joint and/or transformational technologies can be demonstrated and provided to the joint warfighter. The JCTD BA4 funding, unlike the JCTD BA3 developmental

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	**PROJECT** P649: *JCTD*

funding, is specifically targeted at increasing the rate of transition for critical COCOM/Coalition capabilities. The JCTD model has developed a set of metrics, two of which are centered around spiraling products and transitioning capability. The JCTD transition funds are specifically targeted towards these two goals in particular.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	PROJECT P649: *JCTD*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Remarks

Transition Funding for Mapping the Human Terrain (MAP-HT), Extended Space Sensors Architecture (ESSA), Joint Force Projection (JFP), Zephyr, Advanced Distributed Aperture System (ADAS), Hyperspectral Collection and Analysis (HyCAS), Internet Protocol In Space (IRIS), Joint Enable Theater Access-Sea Ports of Debarkation (JETA-SPOD), Comprehensive Maritime Awareness (CMA), Zephyr, Critical Runway Assessment Repair (CRATR), Global Observer (GO), Airborne Weapon Surveillance Systems (AWSS), Joint Force Protection Advanced Security System (JFPSS) , Joint Multi-Mission Electro-Optic System (JMMES).

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RMAC	MIPR	Naval Undersea Warfare Center Division Keyport:Keyport, Washington	0.295	-		-		-		-	Continuing	Continuing	
HyCAS	MIPR	Spectral Airborne Reachback Cell:Wright Patt AFB OH	3.800	-		-		-		-	Continuing	Continuing	
MAP-HT	MIPR	CERDIC:Ft Monmouth NJ	1.100	-		-		-		-	Continuing	Continuing	
JETA SPOD	MIPR	ERDC:Vicksburg MS	0.450	-		-		-		-	Continuing	Continuing	
CRATR	MIPR	AFCESA/CEBF:Tyndall AFB FL	1.700	-		-		-		-	Continuing	Continuing	
JMMES	MIPR	NAVAIR:Pax River MD	1.250	-		-		-		-	Continuing	Continuing	
Large Data	MIPR	NRL:Washington DC	1.175	-		-		-		-	Continuing	Continuing	
STIRS	Allot	Defense Threat Reduction Agency (DTRA) :Ft Belvoir VA	0.300	-		-		-		-	Continuing	Continuing	
TSP	Allot	DISA:Washington DC	0.645	-		-		-		-	Continuing	Continuing	
		Subtotal	10.715	-		-		-		-			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	PROJECT P649: *JCTD*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Transition Funding for Mapping the Human Terrain (MAP-HT), Extended Space Sensors Architecture (ESSA), Joint Force Projection (JFP), Zephyr, Advanced Distributed Aperture System (ADAS), Hyperspectral Collection and Analysis (HyCAS), Internet Protocol In Space (IRIS), Joint Enable Theater Access-Sea Ports of Debarkation (JETA-SPOD), Comprehensive Maritime Awareness (CMA), Zephyr, Critical Runway Assessment Repair (CRATR), Global Observer (GO), Joint Force Protection Advanced Security System (JFPSS) , Joint Multi-Mission Electro-Optic System (JMMES), STIRS.

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	10.715	-		-		-		-			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	PROJECT P649: *JCTD*

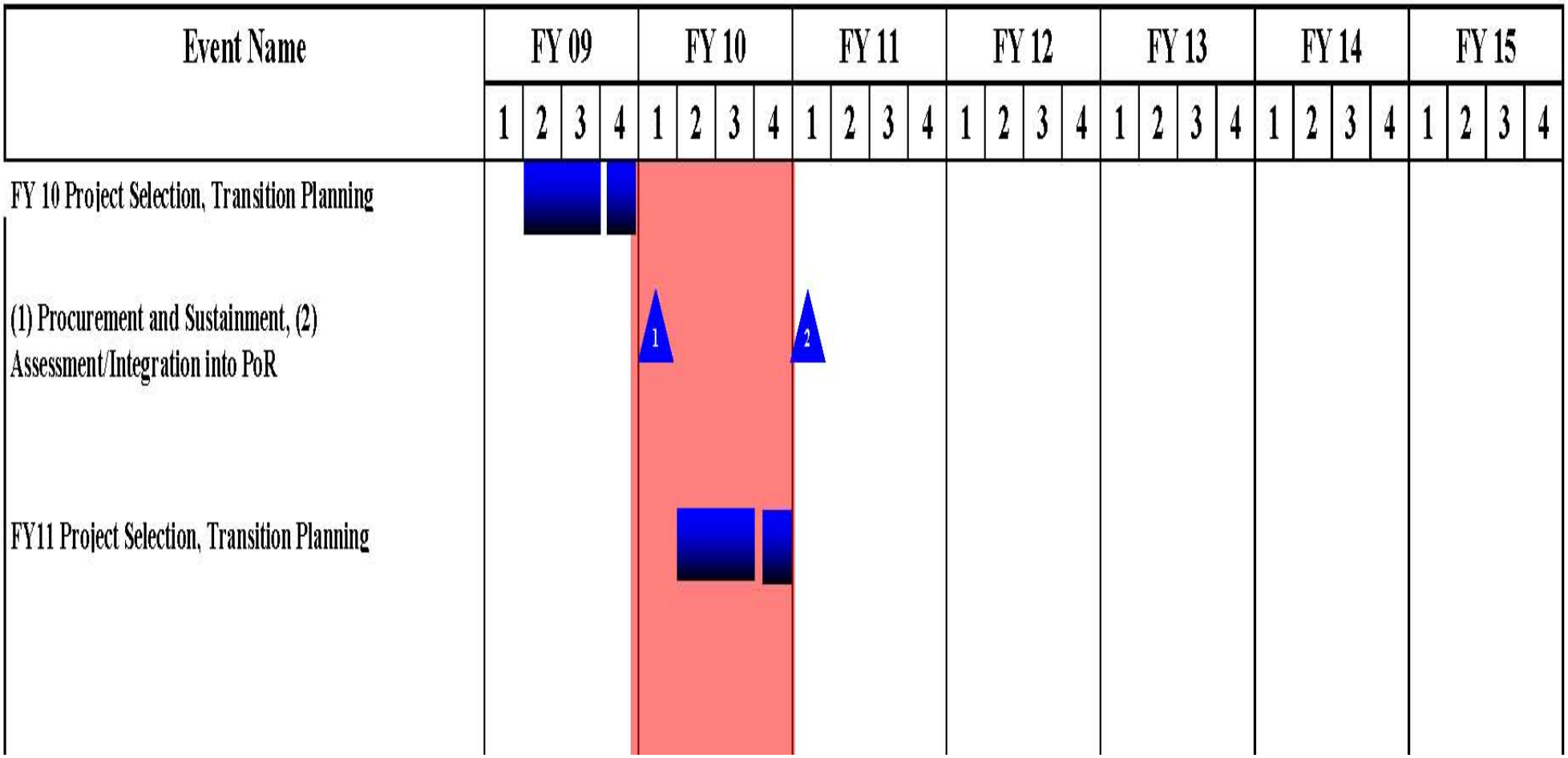

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604648D8Z: *Joint Capability Technology Demonstration Transition (JCTD)*	**PROJECT** P649: *JCTD*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Project Selection	2	2010	3	2010
Transition Planning	4	2010	4	2010
Procurement and Sustainment	1	2010	4	2010
Assessment/Integration into PoR	1	2011	1	2011
Proj Selection	2	2010	3	2010
Transition Plan	4	2010	4	2010

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	6.295	7.459	10.309	-	10.309	12.926	13.181	13.440	13.878	Continuing	Continuing
P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	6.295	7.459	10.309	-	10.309	12.926	13.181	13.440	13.878	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Program will create transition-ready software tools that will help intelligence analysts, operations analysts, operations planners, and wargamers represent, understand, and forecast socio-cultural behavior at the strategic, operational and tactical levels. This program focuses on maturing, hardening, and validating human, social, culture, and behavior modeling (HSCB) related software for transition to meet the needs of the warfighter, integration into the architectures of existing programs of record, and/or maturing software via open architectures to allow broad systems integration. The 6.4 program provides a development to product transition pathway for socio-cultural models, tools, and visualization technologies and products. The work supports the testing, validation, and transition of HSCB model-based technology into existing and developing systems in coordination with Program Executive Offices/Program Managers, Combatant Commanders, Joint and Service organizations, warfighters in need, and other transition customers. The program will transition social cultural relevant data and tools from technologies to capabilities to provide essential forecasting capabilities at the strategic, operational and tactical levels. It will mature and integrate technologies that provide training and mission course of action analysis and preview/rehearsal capabilities at the strategic to tactical level.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	6.950	7.459	12.206	-	12.206
Current President's Budget	6.295	7.459	10.309	-	10.309
Total Adjustments	-0.655	-	-1.897	-	-1.897
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.498	-			
• SBIR/STTR Transfer	-0.146	-			
• Other Program Adjustments	-0.011	-	-	-	-
• Defense Efficiency - Baseline Review	-	-	-1.101	-	-1.101
• Defense Efficiency - Reports, Studies, Boards and Commissions	-	-	-0.781	-	-0.781
• Economic Assumptions	-	-	-0.015	-	-0.015

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	PROJECT P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	6.295	7.459	10.309	-	10.309	12.926	13.181	13.440	13.878	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The program will create transition-ready software tools that will help intelligence analysts, operations analysts, operations planners, and wargamers represent, understand, and forecast socio-cultural behavior at the strategic, operational and tactical levels. This program focuses on maturing, hardening, and validating human, social, culture, and behavior modeling (HSCB) related software for transition to meet the needs of the warfighter, integration into the architectures of existing programs of record, and/or maturing software via open architectures to allow broad systems integration. The 6.4 program provides a development to product transition pathway for socio-cultural models, tools, and visualization technologies and products. The work supports the testing, validation, and transition of HSCB model-based technology into existing and developing systems in coordination with Program Executive Offices/Program Managers, Combatant Commanders, Joint and Service organizations, warfighters in need, and other transition customers. The program will transition social cultural relevant data and tools from technologies to capabilities to provide essential forecasting capabilities at the strategic, operational and tactical levels. It will mature and integrate technologies that provide training and mission course of action analysis and preview/rehearsal capabilities at the strategic to tactical level.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Modeling Capabilities	2.203	2.551	3.637
Description: Mature and deliver socio-cultural modeling capabilities for integration into existing DoD systems. Conduct validation testing of HSCB model based applications.			
FY 2010 Accomplishments: Developed an initial modeling capability targeted to USSOCOM influence operations to support specific transitions including a capability focused on operational planning and intelligence analysis. Inserted capabilities that support target audience analysis, message diffusion and message resonance transition to USSOCOM programs of record. Developed a prototype data collection and modeling methodology for USAFRICOM. Began development of a modeling and analysis capability that allows model outputs to be translated to human decision space and allows the rank ordering and understanding of human actions called TopHAT. Developed an initial modeling capability to support intelligence, economic, and socio-cultural analysis and transitioned it to U.S. Army TRADOC and to an additional programs of record and began planning for transition to TRADOC tactical wargame suite. Implemented a technology integration strategy using awards, federally funded research and development centers, and government laboratories. Implemented and tested modeling capabilities in HSCB development, integration, and test lab as part			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	PROJECT P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
of HSCB testing and assessment process. Determined specific COCOM requirements and continued targeting development to COCOM, warfighter, and program of record needs. Transitioned a data collection/visualization/social network analysis capability to USPACOM. Transitioned Senturion modeling capability to USPACOM. ***FY 2011 Plans:*** Demonstrate models for influence analysis, course of action (COA) analysis, and intelligence/economic/socio-cultural modeling. Continue to refine COCOM and deployed user needs and develop and transition near term technologies to address these needs. Support transition to a wide variety of COCOM and POR targets based on stated and emerging warfighter needs. ***FY 2012 Plans:*** Mature and perform integration of models to enable rapid, accurate forecast of primary and higher-order effects of COA on human behavior. Integrate and test HSCB technologies to transition to user needed capabilities. Particular focus shall be on tools and systems that offer integrated, theoretically grounded hybrid modeling capabilities.			
Title: Visualization Software ***Description:*** Mature and develop software that will visually and digitally represent cultural factors within existing and emerging command and control systems. ***FY 2010 Accomplishments:*** Supported the maturation of Tyton analytic toolset for discovery of non-obvious relationships. Deployed toolset for use on International Security Assistance Force networks. Toolset shall be accredited for use on networks at multiple classification levels and in multiple analytic fusion cells (SPADAC/Bericho). Began development of Canvas, and Oculus visualization capabilities targeted to USSOCOM and other user requirements and programs to support specific transitions. Included capabilities that support the visualization of multi-media data, message diffusion across cultural groups, and message resonance. Visualization capability allows model outputs to be translated to human decision space and allows the rank ordering and understanding of Diplomatic Infrastructure Military Economic (DIME) actions. Developed comprehensive visualization fusion approach and began implementation and testing of visualization capabilities in HSCB development, integration, and test lab as part of HSCB testing and assessment process. Matured HSCB geospatial capabilities within Army Geospatial Enterprise policies, standards, and technology architectures. ***FY 2011 Plans:***	1.574	1.864	2.566

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	PROJECT P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Address operationally requested enhancements to Tyton tools for rapid deployment to users. Continue visualization capability development and develop a non-proprietary visualization and broad technology framework that permits interaction, exploration, and visualization of key elements of HSCB modeling information based on both user and task requirements. ***FY 2012 Plans:*** Assess framework capability to support development and integration of third-party visualization components and support models working at multiple operational (and data) levels (e.g., strategic, tactical, sub-tactical). Continue technical assessment process and focused technical testing.			
Title: Data Collection ***Description:*** Transition first generation data collection tool and decision support tools. ***FY 2010 Accomplishments:*** Began development of second generation tools to support tactical to operational collection, processing, visualization, and dissemination of socio-cultural data and decision support within the “Pathways” program. Leveraged lessons learned from Human Terrain Teams, Provincial Reconstruction Teams, and others to focus the effort to make social cultural data collection and use endogenous to forces. Tool is specifically designed to support tactical to strategic element operations by collecting, processing, and storing data in a way that facilitates knowledge assimilation and transfer. Conducted a proof of concept on behalf of USAFRICOM and transitioned result. Conducted a data collection and processing experiment with Joint Military Information Support Command (Charles River). Inserted prototype data collection tool into USSOCPAC experimental processes. ***FY 2011 Plans:*** Continue development of data collection and processing tool. Research and develop automated data collection, management, translation, and extraction tools to service HSCB models to support emergent user requirements. Intent is to facilitate the integration of current and emerging data sets into appropriate data stores; and enable users to discover, extract, and exploit data in forms appropriate for the models they need to use in support of HSCB problem domains and applications. ***FY 2012 Plans:*** Demonstrate and test with military users transition-ready automated data collection, management, translation and extraction tools to service HSCB models, in order to facilitate the integration of current and emerging data sets into appropriate data stores and exploit data in forms appropriate for the models users need to address HSCB problem domains and applications.	1.259	1.522	2.053
Title: Risk Reduction	1.259	1.522	2.053

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	**PROJECT** P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Conduct the risk reduction activities necessary to ensure that HSCB technologies are validated, accurate, and address user/program of record requirements. ***FY 2010 Accomplishments:*** Increased technical engagement with awardees to ensure that developing technologies on track to meet user needs and are technically and theoretically validated. Increased engagement with key government customers to ensure ready venue for empirical validation and user assessment. Developed technology and tactics, techniques, and procedures to accommodate loose integration of HSCB technologies in technical assessment experiments. ***FY 2011 Plans:*** Continue testing and validation activities from FY 2010 and refine as necessary. The program will produce software prototypes configured for use by USSOCOM, USEUCOM, USAFRICOM, US ARMY TRADOC, Interagency partners and other end users and programs. The program will be executed by a Broad Agency Announcement (BAA) and a targeted request for proposals (RFP) process. The BAA and RFPs will be issued in the first quarter of FY 2011. Proposals will be solicited from all DoD organizations, other federal agencies, and the commercial sector. Proposals will be competed using review panels. ***FY 2012 Plans:*** Conduct the risk reduction activities necessary to ensure that HSCB technologies are validated, accurate, and address user/program of record requirements. Conduct transition focused risk reduction activities designed to ensure that technologies targeted to end user and program of record requirements are brought through a comprehensive systems engineering and technical/theoretical assessment process. Conduct the engineering activities necessary to transition technologies to capabilities to support warfighter, end user, and program of record requirements.			
Accomplishments/Planned Programs Subtotals	6.295	7.459	10.309

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• PE 0602670D8Z BA 2: *HSCB Applied Research*	7.639	8.854	14.858		14.858	17.057	17.432	17.821	18.359	Continuing	Continuing
	9.761	10.834	18.101		18.101	20.743	21.150	21.603	22.252	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	PROJECT P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• PE 0603670D8Z BA 3: *HSCB Advanced Development*											

D. Acquisition Strategy

The program will produce software prototypes configured for use in programs such as the Distributed Common Ground System (DCGS). The program will be executed by a BAA and a targeted RFP process. The BAA and RFPs will be issued in the first quarter of FY 2011. Proposals will be solicited from all DoD organizations, other federal agencies, and the commercial sector. Proposals will be competed using review panels.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	PROJECT P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Engineering Services, Research Studies and Analyses	MIPR	Multiple Performers:Multiple	3.914	4.017	Mar 2011	5.433	Jan 2012	-		5.433	Continuing	Continuing	
		Subtotal	3.914	4.017		5.433		-		5.433			

Remarks

FY 2011 and FY 2012 Perfomers TBD

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	MIPR	Multiple Performers:Multiple	0.800	1.200	Jan 2011	3.200	Jan 2012	-		3.200	Continuing	Continuing	
		Subtotal	0.800	1.200		3.200		-		3.200			

Remarks

FY 2011 and FY 2012 Performers TBD

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Management and Administrative Processes	MIPR	MITRE:McLean, VA	1.581	-		-		-		-	Continuing	Continuing	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	PROJECT P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Management and Administrative Processes	TBD	TBD:TBD	-	2.242	Mar 2011	1.676	Jan 2012	-		1.676	Continuing	Continuing	
		Subtotal	1.581	2.242		1.676		-		1.676			

	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	6.295	7.459		10.309		-		10.309			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	**PROJECT** P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

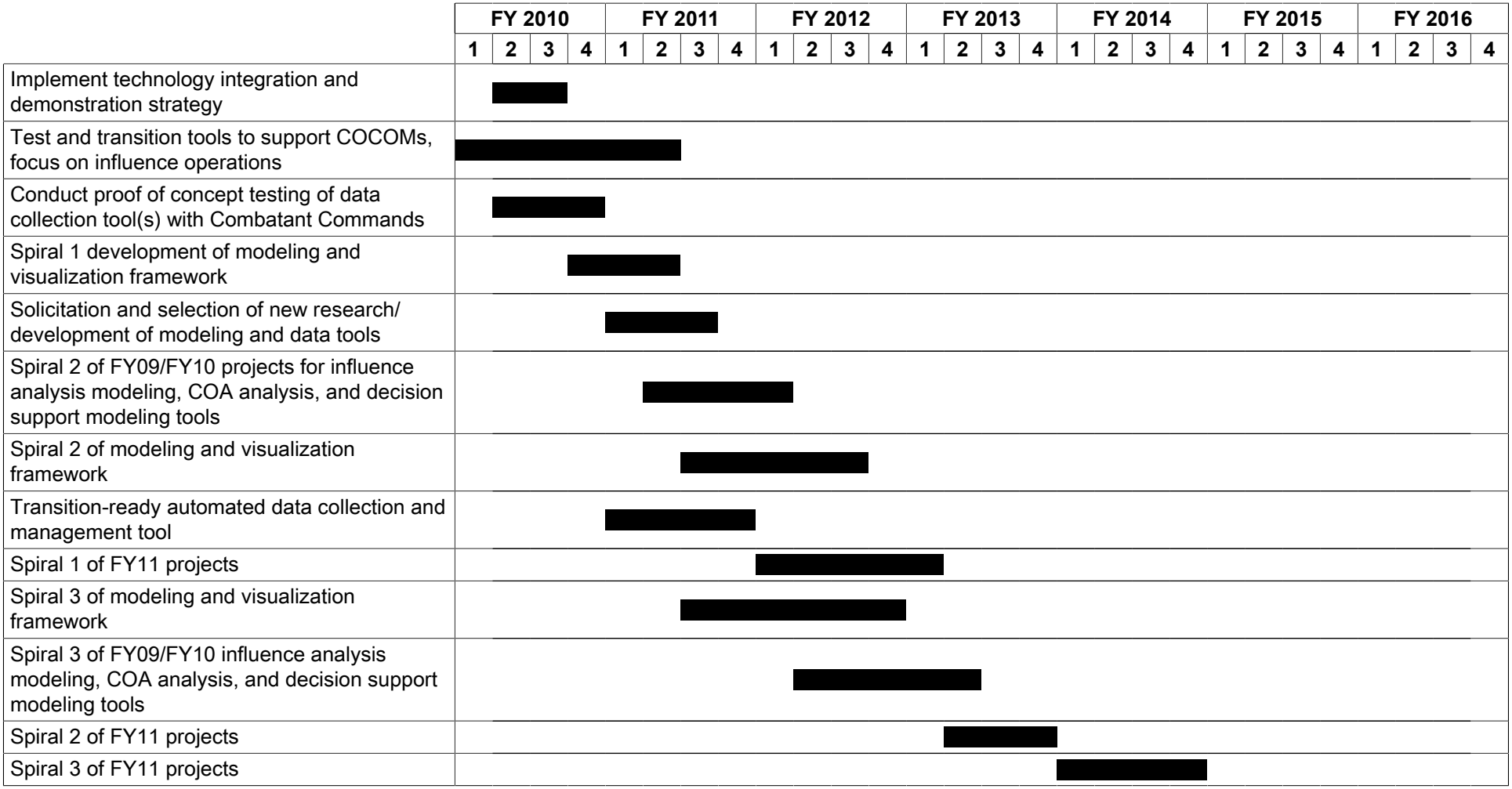

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604670D8Z: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	**PROJECT** P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Implement technology integration and demonstration strategy	2	2010	3	2010
Test and transition tools to support COCOMs, focus on influence operations	1	2010	2	2011
Conduct proof of concept testing of data collection tool(s) with Combatant Commands	2	2010	4	2010
Spiral 1 development of modeling and visualization framework	4	2010	2	2011
Solicitation and selection of new research/development of modeling and data tools	1	2011	3	2011
Spiral 2 of FY09/FY10 projects for influence analysis modeling, COA analysis, and decision support modeling tools	2	2011	1	2012
Spiral 2 of modeling and visualization framework	3	2011	3	2012
Transition-ready automated data collection and management tool	1	2011	4	2011
Spiral 1 of FY11 projects	1	2012	1	2013
Spiral 3 of modeling and visualization framework	3	2011	4	2012
Spiral 3 of FY09/FY10 influence analysis modeling, COA analysis, and decision support modeling tools	2	2012	2	2013
Spiral 2 of FY11 projects	2	2013	4	2013
Spiral 3 of FY11 projects	1	2014	4	2014

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	17.941	19.413	13.024	-	13.024	12.107	12.345	12.591	12.824	Continuing	Continuing
P787: *Joint Systems Integration Command*	17.941	19.413	13.024	-	13.024	12.107	12.345	12.591	12.824	Continuing	Continuing

Note

At the time of this submission, the Department of Defense is developing the Joint program strategy and objectives for FY 12 and beyond. This is as a result of the decision to disestablish U.S. Joint Forces Command, and the Secretary of Defense's efficiency initiatives. Any additional changes for FY12 projects and objectives will be provided when available.

A. Mission Description and Budget Item Justification

The Joint Systems Integration Command Program Element (JSIC PE) provides mission funding for the Joint System Integration Center (JSIC) to conduct interoperability assessments, and develop solutions/recommendations to improve integration of Service, Defense Agency, and coalition systems. JSIC promotes Service/Defense Agency C2 capability integration, and conducts technical, operational, and DOTMLPF assessments of Command and Control (C2) and Command, Control, Computer, Communication, Intelligence, Surveillance and Reconnaissance (C4ISR) capabilities. JSIC serves as the technical analysis and operational assessment activity in support of the Joint Staff capability-driven requirements process, the Joint Capabilities Integration and Development System (JCIDS). JSIC also serves as a joint interoperability compliance activity for the milestone decision authorities/program managers in the Defense acquisition enterprise.

The FY 2005 National Defense Authorization Act (NDAA) directed the transfer for Research, Development, Test and Evaluation (RDT&E) funding for joint warfare experimentation and training programs from Navy accounts to new Defense Wide RDT&E accounts beginning in FY 2007. Joint Staff J8 is the executive agent for the JSIC PE and Director, Defense Research & Engineering (DDR&E) provides execution oversight.

JSIC provides Combatant Commands, at the joint force headquarters level, with a laboratory and assessment environment for the warfighter and capability developer. This environment provides for assessment of current and near-term joint and coalition capabilities primarily at the operational and tactical levels. JSIC's Persistent Command and Control (C2) Environment accurately replicates an operational C2 environment. With this capability, JSIC assesses system of systems interoperability, operational capability, procedural compliance and technical suitability of emerging and existing systems and programs to confirm readiness for deployment. Through JSIC's analysis and assessment, systems are evaluated for "value-added" prior to employment in joint and coalition environments typical of deployed theaters of operation.

By establishing ground truth for interoperability and suggesting remedies for demonstrated shortfalls, JSIC is an enabler for interoperable joint and coalition solutions and provides a means to foster rapid, near-term insertion of C4ISR technology by promoting the ability to meet the DoD direction for spiral development and evolutionary acquisition. JSIC's mission is to provide for the fielding of warfighter C2 systems through rapid systems integration, technical assessment, and operational evaluation using laboratory environments and field venues. In the world of C2 and ISR interoperability, performance in the field is the bottom line. In terms of investment, JSIC is the "ounce of prevention" that precludes a "pound" of mission failure and loss of life due to interoperability failures in military operations.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	19.744	19.413	19.561	-	19.561
Current President's Budget	17.941	19.413	13.024	-	13.024
Total Adjustments	-1.803	-	-6.537	-	-6.537
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.493	-			
• Other Program Adjustments	-1.310	-	-	-	-
• Defense Efficiency - JFCOM Task Force	-	-	-6.052	-	-6.052
• Defense Efficiency – Baseline Review	-	-	-0.121	-	-0.121
• Defense Efficiency – Report, Studies, Boards and Commissions	-	-	-0.339	-	-0.339
• Economic Assumptions	-	-	-0.025	-	-0.025

Change Summary Explanation

Defense Efficiency – JFCOM Task Force. As part of the Department of Defense reform agenda, a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions. This is a result of the decision to disestablish U.S. Joint Forces Command, and the Secretary of Defense's efficiency initiatives. Any additional changes for FY12 projects and objectives will be provided when available.

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P787: *Joint Systems Integration Command*	17.941	19.413	13.024	-	13.024	12.107	12.345	12.591	12.824	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Joint Systems Integration Command Program Element (JSIC PE) provides mission funding for the Joint System Integration Center (JSIC) to conduct interoperability assessments, and develop solutions/recommendations to improve integration of Service, Defense Agency, and coalition systems. JSIC promotes Service/Defense Agency C2 capability integration, and conducts technical, operational, and DOTMLPF assessments of Command and Control (C2) and Command, Control, Computer, Communication, Intelligence, Surveillance and Reconnaissance (C4ISR) capabilities. JSIC serves as the technical analysis and operational assessment activity in support of the Joint Staff capability-driven requirements process, the Joint Capabilities Integration and Development System (JCIDS). JSIC also serves as a joint interoperability compliance activity for the milestone decision authorities/program managers in the Defense acquisition enterprise.

The FY 2005 National Defense Authorization Act (NDAA) directed the transfer for Research, Development, Test and Evaluation (RDT&E) funding for joint warfare experimentation and training programs from Navy accounts to new Defense Wide RDT&E accounts beginning in FY 2007. Joint Staff J8 is the executive agent for the JSIC PE and Director, Defense Research & Engineering (DDR&E) provides execution oversight.

JSIC provides Combatant Commands, at the joint force headquarters level, with a laboratory and assessment environment for the warfighter and capability developer. This environment provides for assessment of current and near-term joint and coalition capabilities primarily at the operational and tactical levels. JSIC's Persistent Command and Control (C2) Environment accurately replicates an operational C2 environment. With this capability, JSIC assesses system of systems interoperability, operational capability, procedural compliance and technical suitability of emerging and existing systems and programs to confirm readiness for deployment. Through JSIC's analysis and assessment, systems are evaluated for "value-added" prior to employment in joint and coalition environments typical of deployed theaters of operation.

By establishing ground truth for interoperability and suggesting remedies for demonstrated shortfalls, JSIC is an enabler for interoperable joint and coalition solutions and provides a means to foster rapid, near-term insertion of C4ISR technology by promoting the ability to meet the DoD direction for spiral development and evolutionary acquisition. JSIC's mission is to provide for the fielding of warfighter C2 systems through rapid systems integration, technical assessment, and operational evaluation using laboratory environments and field venues. In the world of C2 and ISR interoperability, performance in the field is the bottom line. In terms of investment, JSIC is the "ounce of prevention" that precludes a "pound" of mission failure and loss of life due to interoperability failures in military operations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Interoperability Technology Demonstration Center (ITDC) and Interoperability Assessments (IA)	10.141	11.346	6.635

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Primary outcome (objective) for this effort is seamless interoperability between DoD systems supporting the warfighter. ITDC supports the interoperability assessment of systems in five categories: operational, system of systems, technical, software, and procedural. Assessment projects identified for FY 2011 will focus on: Operations and Intelligence Integration, Tactical Edge Integration, Complex Problem Analysis, Acquisition Process Support, and Service-Oriented Architecture Migration. These assessments provide supporting justification for continued development of a program within the acquisition system and resolve capability shortfalls of fielded systems. ***FY 2010 Accomplishments:*** Conducted the following interoperability assessments of C2 systems/applications in support of Combatant Commanders, Services, and Agencies at a cost of $9,940K: Operations and Intelligence Integration activities include: Joint System Baseline Assessments 2010 (JSBA10) –Assessed the ability of commanders to discover, access, and coordinate information from the Distributed Control Ground System (DCGS) program and the Global Command and Control System-Joint (GCCS-J) family of systems to identify key interoperability issues during the following exercises and activities: Austere Challenge 10 (AC10) – Assessed the interoperability of joint and coalition Command and Control Intelligence, Surveillance, Reconnaissance, and Targeting (C2ISRT) systems, databases, and net-centric services for Combined Forces Air Component Command (CFACC) operations in a Coalition Air Operations Center (CAOC) environment and the interoperability of joint and coalition systems, databases, and net-centric services for Joint Targeting and Intelligence operations in a Coalition Joint Task Force (CJTF) environment. Empire Challenge 10 (EC10) – Assessed five Joint Capability Threads (JCT); Distributed Common Ground System (DCGS) enterprise interoperability, data integration to support operations in a complex environment, persistent surveillance over key terrain, civilian casualty and fratricide reduction, and information sharing to support multinational/whole-of-government interoperability. Trident Warrior 10 (TW10) – Assessed the interoperability to ingest Full Motion Video (FMV) from a Tactical Unmanned Air Vehicle (TUAV), to the Distributed Common Ground System-Navy (DCGS-N) segment and subsequent sharing to the Global Command and Control System – Joint (GCCS-J).			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
PRISM to MAJIIC Interoperability Assessment –Assessed that Planning Tool for Resource, Integration, Synchronization and Management (PRISM) and the interface to NATO Multi-Sensor Aerospace-Ground Joint ISR Interoperability Coalition (MAJIIC) was functional and ready for operations by demonstrating automated interoperability and exchange of intelligence requirements. Command and Control Intelligence, Surveillance, and Reconnaissance (C2-ISR) Interoperability Assessment 2010 – In coordination with the Joint Intelligence Interoperability Board (JIIB), resolved Integrated Priority List (IPL) problem statements by conducting interoperability assessments during major events. FY10 issues addressed assessment of the capability of Global Command and Control Systems-Joint (GCCS-J) and Distributed Common Ground Systems (DCGS) to share intelligence data that is automatically rendered or visualized in the common operational picture and the ability of a C2 node to automatically access and view collection management information. Joint Integrated Air and Missile Defense Organization (JIAMDO) Joint Sensor Integration (JSI) - Provided a Joint Force Marine Component Commander (JFMCC) node and Joint Task Force Headquarters (JTFHQ) node on the Secure Defense Research and Engineering Network (SDREN). Provided maintenance and technical support, Voice Over Internet Protocol (VoIP) phones, NIPRNET and SIPRNET. Tactical Edge Integration activities include: NGA Image Product Library (IPL) v6.5.1 Interoperability Assessment - Assessed the interoperability of IPL v6.5.1 software with Global Command and Control System-Joint (GCCS-J) segments and interfaces including Joint Targeting Toolbox (JTT), Analyst Workshop (AWS)/Java Image and Video Exploitation (JIVE) ingestor, and Image which optimized delivery of critically important imagery warfighter customers. Afghanistan Mission Network (AMN) Coalition Interoperability Assurance Validation Assessment – This on-going series of events supports the International Security Assistance Forces (ISAF) Joint Command (IJC) through CENTCOM's Task Force 236 in collaboration with Joint Interoperability Test Command (JITC), the United Kingdom C2 Battle Lab (C2BL), NATO Consultation, Command and Control Agency (NC3A) and NATO Communications and Information Systems Services Agency (NCSA) to assess, identify and resolve joint and coalition communications interoperability and integration problems. Complex Problem Analysis activities include:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
C2 Capability Portfolio Manager (CPM) Focus Integration Team (FIT) Support for C2 On-the-Move (OTM) – Supported the C2 OTM FIT assess the core functional requirements for C2 OTM systems. Developed innovative tools and techniques to support analysis of C2 based on technical, operational, and programmatic criteria that support the C2 community of interest at large. Command and Control Registry (C2R)/C2 Pedia Development – Reengineered the C2R database to accommodate a variety of data types and multiple data sets and integrate a highly robust enterprise search engine that supports advanced data discovery, mining and aggregation across the web. Visual C2 Capability Analysis and Tradeoff Suite (VCATS) – Initiated prototype development of an assessment framework and interactive "dashboard" to demonstrate the ability to make C2 Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) tradeoffs and recommendations. Acquisition Process support activities include: Coalition Warrior Interoperability Demonstration 2010 (CWID10) Selected Trial Assessments – Assessed six interoperability trials and implemented improvements to the CWID assessment and reporting process. Global Command and Control System-Joint (GCCS-J) Block V Post Implementation Review (PIR) – Performed phase I data collection and analysis on behalf of the operational sponsor's sustainment and synchronization requirements for GCCS-J PIR. Service Oriented Architecture (SOA) Migration activities include: Net-Centric Security Pilot Assessment – Assessment demonstrated the ability for different security implementations to interact with different data sources, demonstrated service policies are actionable and usable by using enhanced applications and data security, demonstrated the use of Attribute Based Access Control (ABAC) methodology at the enterprise and local level, utilized enterprise attribute service necessary to pre-populate user account request, and demonstrated real-time changes in access control policies by allowing other users to access data. C2 Data Pilot Phase 4A – Assessment demonstrated the ability to transition identified Authoritative Data Source (ADS) from legacy architecture to a Service Oriented Architecture (SOA) approach, established an approach toward a joint forces solution for interfacing with ADS using Global Force Management Tool Set (GFMTS) in a SOA environment, and demonstrated GFMTS capability to significantly reduce the time spent by operators gathering and compiling data, thereby allowing operators more time to analyze information.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
C2 Data Pilot Phase 4B - Assessed the ability of Global Force Management Tool Set (GFMTS) to rapidly expose data to identified Command and Control (C2) Authoritative Data Sources (ADS) through the use of web services. ***FY 2011 Plans:*** Continue conducting interoperability assessments and demonstrations of Command and Control (C2) developmental systems/ applications for Combatant Commanders, Services, and Agencies that support Operations and Intelligence Integration, Tactical Edge Integration, Capability Gap Analysis, Acquisition Process Support, and Service Oriented Architecture Migration activities. Operations and Intelligence Integration activities include: Joint System Baseline Assessments 2011 (JSBA11) - Assessments will focus on three major interoperability problem areas that impair information sharing: information exchanges between the Command and Control and Battlespace Awareness portfolios, joint/coalition targeting, and coalition operations. NATO Targeting Systems Interoperability Assessment (NTSIA) – Assess changes to US and NATO targeting system interoperability to include potential solutions to permit semi-automated exchanges of critical targeting data. Command and Control, Intelligence, Surveillance, Reconnaissance, and Targeting (C2ISRT) Interoperability Assessment – Conduct interoperability assessments to support resolution of Integrated Priority List (IPL) and Joint Urgent Operation Need Statements (JUONS)and improve operations and intelligence interoperability. TALISMAN SABRE Interoperability Assessment – Assess selected US and coalition Command, Control, Intelligence, Surveillance, Reconnaissance and Targeting (C2ISRT) applications and compare results with the European theater. Trident Warrior 2011 (TW11) Interoperability Assessments - Assess the joint interoperability of the Distributed Common Ground System-Navy (DCGS-N) segments and joint C2 nodes. Empire Challenge 11 (EC11) – Perform assessments of emerging Intelligence, Surveillance, and Reconnaissance (ISR) capabilities and assess joint/coalition interoperability in support of the International Security Assistance Force (ISAF).			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Afghanistan Mission Network (AMN) Coalition Interoperability Assurance Validation Assessment – Conduct an interoperability assessment of coalition common operational picture management systems to determine interoperability and functionality in a coalition/joint mission environment. Tactical Edge Integration activities include: Joint Integrated Air and Missile Defense Organization (JIAMDO) Assessment Support - Assess three Joint Distributed Engineering Plant (JDEP) event candidates; Joint/Multi-Service Sensor Integration (J/MSI); Integrated Air and Missile (IAMD) Common Operational Picture (COP); and Joint IAMD Net-Centric Warfare Integrated Planning (JNWIP). Acquisition Process Support activities include: Coalition Warrior Interoperability Demonstration 2011 (CWID11) Selected Trial Assessments - CWID explores solutions aimed at enhancing interoperability and information sharing with multinational coalition participation as a cornerstone. Conduct assessments of selected interoperability trials. Tactical Edge Data Solutions (TEDS) JCTD Assessment – Conduct a limited interoperability assessment focusing on movement of information and data between a Marine Battalion Combat Operations Center and an Army Battalion Tactical Operations Center. Global Command and Control System-Joint (GCCS-J) Block V Post Implementation Review (PIR) Assessment – Continue phase 2 &3 data collection and analysis on behalf of the operational sponsor's sustainment and synchronization requirements for GCCS-J PIR to ensure the needs of the warfighter. Capability Gap Analysis activities include: Command and Control (C2) Central - Continue to expand C2 Central's comprehensive system descriptions; document library; images; architectures; analysis and visualization tools capabilities; yellow pages and interactive calendar of events and further refine search engine capabilities for the user. Joint Irregular Warfare Center (JIWC) Joint Urban Operations (JUO) Command and Control (C2) Capability Analysis - 141 JUO related tasks have been mapped to capability gaps through several JIWC led analytical efforts. Mapping of these tasks to the Joint Common Systems Function List (JCSFL) provides a common baseline for conducting analysis aimed at gap mitigation. Additionally, the JUO task mapping will be integrated into C2 Central and made available to all users.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Networks and Information Integration/Capability Development Increment (NII/CDI) Analysis – Update the functionality of 43 systems and document the refined mapping process. Utilizing C2 capability delivery increments articulate the collective capabilities with the C2 portfolio for a given period of time and provide a basis for an analytical understanding of a system, program, or initiative's role in delivering C2 capabilities. Service Oriented Architecture Migration activities include: Joint Interoperability Assessment Net-Centric Tool (JIANT) Phase 2 Development - JIANT is a web-based architecture-centric tool that is accessible concurrently by analysts involved in the assessment planning process. It supports automated mission thread analysis, assessment planning, and data collection in distributed environments. Visual Command and Control Capability Analysis and Tradeoff Suite (VCATS) Continuation – Further development of an assessment framework and an interactive "dashboard" to demonstrate the ability to make C2 Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) tradeoffs and recommendations. ***FY 2012 Plans:*** Continue the efforts initiated for FY 2011 and respond to unpredictable operational issues and shortfalls. Interoperability demonstrations will be conducted to solve warfighter problems, including coalition challenges. Focus areas will include the Global Command and Control System-Joint (GCCS-J) family of systems, Distributed Common Ground System (DCGS) and interoperability with coalition systems. Operations and Intelligence Integration activities include: Joint System Baseline Assessments 2012 (JSBA12) - Assessments will focus on problem areas that impair information sharing: information exchanges between the Command and Control and Battlespace Awareness portfolios and coalition operations. Command and Control, Intelligence, Surveillance, Reconnaissance, and Targeting (C2ISRT) Interoperability Assessment – Conduct interoperability assessments to support resolution of Integrated Priority List (IPL) and Joint Urgent Operation Need Statements (JUONS)and improve operations and intelligence interoperability. TALISMAN SABRE Interoperability Assessment – Assess selected US and coalition Command, Control, Intelligence, Surveillance, Reconnaissance and Targeting (C2ISRT) applications.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Trident Warrior 2012 (TW12) Interoperability Assessments - Assess the joint interoperability of joint C2 nodes. Empire Challenge 12 (EC12) – Perform assessments of emerging Intelligence, Surveillance, and Reconnaissance (ISR) capabilities and assess joint/coalition interoperability. Afghanistan Mission Network (AMN) Coalition Interoperability Assurance Validation Assessment – Conduct interoperability assessments of coalition systems to determine interoperability and functionality in a coalition/joint mission environment. Tactical Edge Integration activities include: Joint Integrated Air and Missile Defense Organization (JIAMDO) Assessment Support - Assess three Joint Distributed Engineering Plant (JDEP) event candidates; Joint/Multi-Service Sensor Integration (J/MSI); Integrated Air and Missile (IAMD) Common Operational Picture (COP); and Joint IAMD Net-Centric Warfare Integrated Planning (JNWIP).			
Title: Technical Assessments and Integration (TA&I)	2.800	2.961	3.472
Description: Primary Outcome (objective) for this effort is to provide near-term technical solutions for integration, assessment and delivery of operational capabilities that address near-term operational and tactical requirements. TA&I use organic laboratory resources, equipment, and technical personnel to integrate emerging technologies. JSIC also provides Doctrine, Organizational, Training, Materiel, Leadership, Personnel, Facilities (DOTMLPF) recommendations on fielding strategies for Joint Staff endorsement. TA&I capability gap areas of concentration identified include; Tactical Edge Integration, and Acquisition Process Support activities. The primary outputs and efficiencies realized are: 1) Reduced costs and delivery time to the warfighter through application of commercial and emerging technology to solve near-term Combatant Commander (COCOM) Command and Control (C2) capability gaps; 2) Increased cost avoidance through transition of successful commercial technology integration shortfalls to applicable Service programs of record; 3) Decreased reliance on post delivery interoperability corrections; 4) Improved assessment-based recommendations of technology solutions that address the military utility of proposed solutions and identify relevant service programs, doctrinal impacts, training implications, and personnel requirements; and 5) Improved life-cycle support for capabilities deployed to forces. ***FY 2010 Accomplishments:***			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Conducted the following technical assessments and integration of C2 systems/applications in support of Combatant Commanders, Services, and Agencies at a cost of $2,800K: Tactical Cellular Network (TactiCell) - Provided technical and engineering services and developed test architectures and plans to use Evolution Data Optimized (EVDO) cell phones to receive voice, video, and data information. TactiCell established and maintained voice communication between legacy tactical radios and cellular handsets, initiated and maintained Voice over Secure Internet Protocol (VoSIP) calls, conducted secure Video Teleconferencing (VTC) at various data rates, pulled Unmanned Aerial Vehicle (UAV) streaming video while on the move and roaming between cellular nodes, and used mobile phone applications to perform Blue Force Tracking (BFT) display, video streaming, white boarding and chat functions. Adopted and sustained as a key component of the USSOCOM program, High Bandwidth-Command and Control on the Move (HB-COTM). Deployable Executive Communications (DEC) – Delivered an approved and certified capability that provides secure, modern, lightweight and versatile communications capability including Video Teleconferencing (VTC), Voice-over-Internet-Protocol (VoIP), Voice-over-Secure-Internet-Protocol (VoSIP), and access to the SIPRNet, NIPRNet, and other networks. Tactical Service Provider (TSP)Joint Concept Technology Demonstration (JCTD) - Demonstrated warfighting application and usefulness of a hybrid communications architecture that uses emerging standards-based, commercial-off-the-shelf satellite communications and wireless technology to extend global, wideband communications and subscriber services to the tactical edge. DISA will adopt TSP as a program of record under the Global Broadcast System (GBS) umbrella. National Security Agency (NSA) Secure Wireless LAN (SWLAN) Technical Assessment – Conducted a pilot implementation of NSA/I732 Secure Wireless LAN (SWLAN) Architecture, which provided feedback from system administrators and end-users, on configuration and integration issues/concerns, along with post assessment recommendations. SecNet 54 Technical Assessment - Assessed the utility of SecNet 54 in various wired and wireless configurations for data throughput, ease of configuration and setup, interoperability with other wireless devices, and utility to the warfighter as an In-Line Encryptor (INE), Access Point (AP) and wireless bridge. ***FY 2011 Plans:*** Command and Control (C2) Applications Over Broadband Cellular Technical Assessment – Provide a technical and functional assessment of C2 applications; Joint Automated Deep Operations Coordination System (JADOCS), Command and Control Personal Computer (C2PC); Force XXI Battle Command, Brigade-and-Below (FBCB2), and Adobe Connect over broadband cellular.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
National Security Agency (NSA) Secure Wireless LAN (SWLAN) Technical Assessment Continuation – Conducting a pilot implementation of NSA/I732 Secure Wireless LAN (SWLAN) Architecture, which provided feedback from system administrators and end-users, on configuration and integration issues/concerns, along with post assessment recommendations. Intelligence, Surveillance and Reconnaissance Video Dissemination Technologies – Perform technical integration to validate industry-standard video technology and networking protocols Livecast, MediaFLO, and Inca-X are interoperable with selected systems and architectures. Army Joint Tactical Wireless Communications Capability (JTWCC) Assessment Support – Provide broadband cellular technical subject matter experts and Command and Control (C2) Applications Over Broadband Cellular suite for use as a tool to evaluate multiple broadband solutions. National Security Agency (NSA) Suite B Encryption Integration and Utility Assessment – Provide network and technical assistance to NSA in the development of a Suite B software encryption solution. Suite B software provides encryption capability without the use of Type 1 encryption devices (hardware) thereby reducing security risks. C2 Link Aggregation Technical Assessment –Validate the KenCast FaZZT software's ability to aggregate an internet protocol stream across diverse, error prone, dynamic bandwidth, and Network Address Translated (NAT) links with varying end to end latencies and then combine the streams back together. ***FY 2012 Plans:*** Continue FY 2011 initiatives investigating potential impacts of technology advances in wireless devices, mesh and ad-hoc networking, satellite modem technology, and small lightweight secure digital capabilities on warfighter command and control capabilities and match emerging critical warfighter requirements with the technologies to identify near-term technology solutions supporting Combatant Commanders. Command and Control (C2) Applications Over Broadband Cellular Technical Assessment – Continue technical and functional assessments of C2 applications; Joint Automated Deep Operations Coordination System (JADOCS), Command and Control Personal Computer (C2PC); Force XXI Battle Command, Brigade-and-Below (FBCB2), and Adobe Connect over broadband cellular.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Intelligence, Surveillance and Reconnaissance Video Dissemination Technologies – Continue technical integration to validate industry-standard video technology and networking protocols Livecast, MediaFLO, and Inca-X are interoperable with selected systems and architectures. Army Joint Tactical Wireless Communications Capability (JTWCC) Assessment Support – Provide broadband cellular technical subject matter experts and Command and Control (C2) Applications Over Broadband Cellular suite for use as a tool to evaluate multiple broadband solutions. National Security Agency (NSA) Suite B Encryption Integration and Utility Assessment – Continue to provide network and technical assistance to NSA in the development of a Suite B software encryption solution. Suite B software provides encryption capability without using a hardware solution.			
Title: Capability Assessment	1.500	1.532	-
Description: Primary Outcome (objective) for this effort is to provide objective based assessment of Doctrine, Organizational, Training, Materiel, Leadership, Personnel, Facilities (DOTMLPF) solution sets supporting the Joint Task Force Commander. JSIC will analyze COCOM near-term requirements using DOTMLPF criteria. JSIC will identify current, emerging, or mature technologies to address materiel requirements. Comprehensive assessments covering joint maturity, interoperability, warfighter utility, and operational effectiveness will be conducted on legacy and transformational projects. JSIC will provide DOTMLPF recommendations on fielding strategies for Joint Staff endorsement. The primary outputs and efficiencies realized are: 1) Increased number of recommended improvements that enhance the capability of Joint Task Force Headquarters (JTF HQ); 2) Increased number of verifiable capability solutions recommended for fielding to the Combatant Commander based on quantified capability improvements; 3) Increased empirical data to support benefit-cost ratio improvements of JTF HQ investment decisions to ensure JTF HQs command and control (C2) capabilities are interoperable from technical and operational standpoints; 4) Increased number of assessments conducted that identify current force JTF HQs C2 systems that are interoperable and supported, that inform and recommend solutions to integrate, modify, or retire current force systems; 5) Increased number of assessment based recommendations of technology solutions that address the military utility of proposed and existing Service solutions; and 6) Increased number of solutions deployed with recognized DOTMLPF impacts. Program Management offices benefit because the JSIC program provides a venue for Military Utility Assessments (MUAs) of technologies before committing to implementation. The potential savings associated with finding existing commercial technologies to provide gap filler solutions, and avoid the fielding of systems that are not interoperable or that fail to meet warfighter needs, are			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

difficult to quantify. Potentially life-threatening shortfalls are identified and fixed in advance of fielding. Services benefit directly by reduced Program Manager costs and by fielding systems that are interoperable and meet warfighter needs.

FY 2010 Accomplishments:
Conducted the following capability assessments of C2 systems applications in support of Combatant Commanders, Services, and Agencies at a cost of $1,500K:

Cross Domain Enterprise Solutions (CDES) One Way File Transfer (1WFT) - Conducted a technical assessment of DISA's CDES one-way transfer capability, Exchange File Transfer (XFT) system, over production networks in support of the USCENTCOM requirement. Based upon assessment results, DISA delayed deployment of the operational guard to make improvements to the XFT content filtering software, system architecture and configuration.

Cross Domain Enterprise Solutions (CDES) Two Way File Transfer (2WFT) - Conducted a warfighter utility and technical assessment of the CDES two-way automated office file and imagery transfer capability over production networks.

Joint Interoperability Assessment Net-Centric Tool (JIANT) Development – JIANT is a web-based architecture-centric tool that is accessible concurrently by analysts involved in the assessment planning process. It supports automated mission thread analysis, assessment planning, and data collection in distributed environments.

Global Command Support System-Joint (GCSS-J) Assessments - Assessment of GCSS-J system improvements prior to release to enhance usability and identify remaining capability gaps to the Program Manager. Established a GCSS-J environment to enable both utility assessments and training events to take place concurrently.

FY 2011 Plans:
Cross Domain Solutions (CDS) Baseline Capability Assessment of Radiant Mercury v5.0 – Conduct a capability assessment, measuring the functional strengths and weaknesses of the Radiant Mercury v 5.0 guard against Unified Cross Domain Management Office (UCDMO) prescribed criteria.

Cross Domain Enterprise Solutions (CDES) File Transfer on Demand Follow-on Assessment - Conduct warfighter utility and technical assessments of follow-on CDES two-way automated office file and imagery transfer capabilities.

Trusted Manager Technical Assessment (TMAN) Assessment – Conduct strict performance-based assessment of Trusted Manager II technology, to measure the CDS technologies strengths and weaknesses.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Global Command Support System-Joint (GCSS-J) Host Based Security System (HBSS) Cyber-Capability Support and Assessment – Assess an information assurance HBSS of the GCSS-J system prior to release to enhance usability and identify remaining capability gaps to the program management office. C2 Data Pilot Phase 5 Assessment – Provide interoperability and utility assessment to demonstrate data services over a service oriented architecture foundation. ***FY 2012 Plans:*** Function will be eliminated as part of the USJFCOM disestablishment.			
Title: Persistent Command and Control Environment / Federated Joint C2 Laboratories (FJC2L) ***Description:*** JSIC supports a Persistent Command and Control Environment by aggressively engaging the Services in a collaborative effort to bring joint solutions through JSIC's capability integration, interoperability demonstrations and capability assessments process. JSIC works in collaboration and formal coordination with the Joint Staff, Combatant Commanders, Services, defense agencies, departments and agencies outside of DoD, as well as allies and other coalition partners to align efforts, create a culture of innovation, and foster the development of new joint operational capabilities, along with measures of merit, to serve as the basis for exploring future joint capabilities and operations through joint and coalition experimentation and assessment. ***FY 2010 Accomplishments:*** Enhanced the Persistent Command and Control Environment in support of Combatant Commanders, Services, and Agencies at a cost of $3,500K: Coalition Warrior Interoperability Demonstration 2010 (CWID10) Support - CWID is a Chairman Joint Chiefs of Staff (CJCS) J6 annual event enabling the Combatant Commanders and the international community to investigate technology solutions that focus on relevant and timely objectives for enhancing coalition interoperability and exploring new partnerships. Provided the host Combatant Commander environment, technical support, and connectivity for CWID10. Bold Quest 2010 (BQ10) Support - Provided network engineers and technicians to assist with the build and troubleshooting of the Bold Quest network. Unified Endeavor Support – Provided a Joint Mission Environment Test Capability (JMETC) node, Interim Authority To Operate (IATO) accreditation of tools, and connectivity over the JMETC network to allow data collection and analysis of Global Command and Control Systems-Joint (GCCS-J).	3.500	3.574	2.917

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Joint Test and Evaluation (JT&E) Joint Data Integration – Provided Global Command and Control Systems-Joint (GCCS-J) suites, a USSTRATCOM feed and other injects as required in support of a Defense Operational Test and Evaluation (DOT&E) Joint Test. Virtual Symposium Infrastructure Support – Provided technical and engineering support to build an Adobe-Connect Pro collaboration server providing real collaboration between Australia/Canada/United Kingdom/US partners. Partnered with the Multi-National Information Sharing (MNIS) joint program office to use Combined Federated Battle Laboratory Network (CFBLnet) classified enclave as a collaboration node, as well as specific domain name services for email and Voice over Internet Protocol (VoIP) for all participants. Joint Deployment Training Center (JDTC) Infrastructure Support - Established an operational Global Command and Control System-Joint (GCCS-J) development and assessment server suite. Provided technical and engineering support and access to JSIC's GCCS-J 4.2 and 4.1.1 suites to conduct an impact assessment and support course and curriculum development for the JDTC. Empire Challenge 2010 (EC10) C2 Systems Support – Provided infrastructure, communications, network, information assurance, security, and engineering support as requested. ***FY 2011 Plans:*** Coalition Warrior Interoperability Demonstration 2011 (CWID11) Support - CWID is the Chairman Joint Chiefs of Staff (CJCS J6) annual event enabling the Combatant Commanders and the international community to investigate technology solutions that focus on relevant and timely objectives for enhancing coalition interoperability and exploring new partnerships. Provide the environment, technical support, and connectivity for CWID11. DoD Interoperability Communications Exercise 2011 (DICE11) Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested. Joint Users Interoperability Communications Exercise C2 Systems 2011 (JUICE11) Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested. Afghanistan Mission Network (AMN) C2 Systems Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Empire Challenge 2011 (EC11) C2 Systems Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested. Joint Training Counter Improvised Explosive Device (IED) Operations Center Support – Support US Army TRADOC's request for access to C2 systems, and technical support to harvest and process for training purposes, select data streams from identified C2 systems. C2 Capability in a Denied or Degraded Environment (C2D2E) – Provide a C2 JTF environment with selected legacy systems. Joint Systems Integration and Interoperability Laboratory (JSIIL) C2 Systems Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested. AFRICOM Judicious Response (AJR) Exercise Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested. Joint Mission Thread Architecture Framework and Data Model (JMT AFDM) - Provide infrastructure, communications, network, information assurance, security, and engineering support as requested. ***FY 2012 Plans:*** Continue FY 2011 initiatives by engaging the Services and Communities of Interest (COI) to leverage the capabilities of the Persistent Command and Control Environment by bringing joint solutions through JSIC's integration and operational assessment process. Also continue to expand existing relationships with Service and Coalition Labs and Engineering organizations. DoD Interoperability Communications Exercise 2012 (DICE12) Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested. Joint Users Interoperability Communications Exercise C2 Systems 2012 (JUICE12) Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested. Afghanistan Mission Network (AMN) C2 Systems Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested. Empire Challenge 2012 (EC12) C2 Systems Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Joint Training Counter Improvised Explosive Device (IED) Operations Center Support – Support US Army TRADOC's request for access to C2 systems, and technical support to harvest and process for training purposes, select data streams from identified C2 systems. C2 Capability in a Denied or Degraded Environment (C2D2E) – Provide a C2 JTF environment with selected legacy systems. AFRICOM Judicious Response (AJR) Exercise Support – Provide infrastructure, communications, network, information assurance, security, and engineering support as requested. Joint Mission Thread Architecture Framework and Data Model (JMT AFDM) - Provide infrastructure, communications, network, information assurance, security, and engineering support as requested.			
Accomplishments/Planned Programs Subtotals	17.941	19.413	13.024

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

JSIC supports interoperability of systems selected for acquisition, integration and fielding. JSIC is intended to be a forcing function to discover and provide interoperable joint solutions as a means to foster rapid, near-term insertion of command and control technology by promoting the ability to meet the DoD direction for spiral development and evolutionary acquisition. Services and Defense Agencies are responsible for conducting acquisition activities in Programs of Record (POR).

E. Performance Metrics

FY 2010
Strategic Goals Supported: Joint Command and Control
Existing Baseline: Number of FY 2009 Assessments/Interoperability Demonstrations/Capability Integrations/Persistent Command and Control Environment engagements
Planned Performance Improvement / Requirement Goal: 5 percent increase in assessments, integrations and demonstrations
Actual Performance Improvement: Achieved 35 of planned 30 assessments/demonstrations
Planned Performance Actual Performance Metric / Methods of Measurement: Number of assessments, integrations and demonstrations
Actual Performance Metric / Methods of Measurement: Completed 35 assessments/demonstrations
FY 2011
Strategic Goals Supported: Joint Command and Control

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604787D8Z: *Joint Systems Integration Command*	**PROJECT** P787: *Joint Systems Integration Command*

Existing Baseline: Number of FY 2010 Assessments/Interoperability Demonstrations/Capability Integrations - 35
Planned Performance Improvement / Requirement Goal: 5percent increase in assessments, integrations and demonstrations
Actual Performance Improvement:

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*

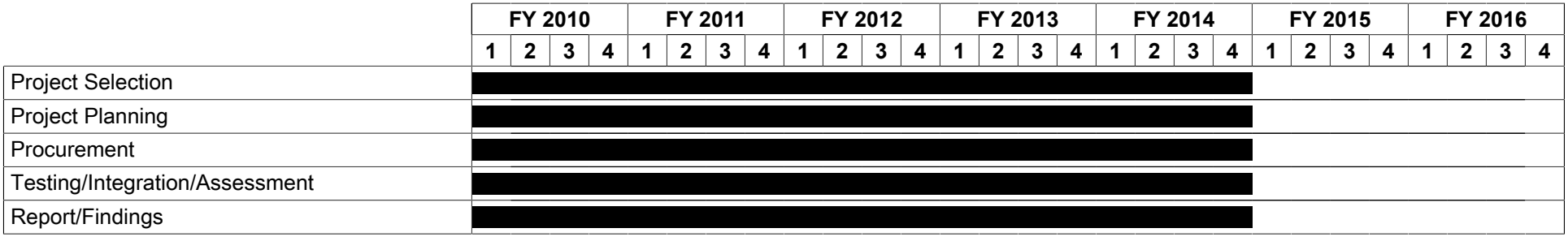

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604787D8Z: *Joint Systems Integration Command*	**PROJECT** P787: *Joint Systems Integration Command*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Project Selection	1	2010	4	2014
Project Planning	1	2010	4	2014
Procurement	1	2010	4	2014
Testing/Integration/Assessment	1	2010	4	2014
Report/Findings	1	2010	4	2014

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0604828D8Z: *Joint Fires Integration & Interoperability*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	15.511	16.637	9.290	-	9.290	8.180	8.341	8.506	8.663	Continuing	Continuing
P857: *Joint Fires Integration & Interoperability*	15.511	16.637	9.290	-	9.290	8.180	8.341	8.506	8.663	Continuing	Continuing

Note

At the time of this submission, the Department of Defense is developing the Joint Systems program strategy and objectives for FY 12 and beyond. This is as a result of the decision to disestablish U.S. Joint Forces Command, and the Secretary of Defense's efficiency initiatives. Any additional changes for FY12 projects and objectives will be provided when available.

A. Mission Description and Budget Item Justification

The Joint Fires Integration & Interoperability Team (JFIIT) funded by this program is a compact cell of unique Joint fires experts adding value to much larger Service investments in force elements delivering kinetic and non kinetic effects supporting ground operations. Services, Joint, and Combatant Commanders and their Staffs proactively seek JFIIT advice and assistance to improve the execution of combat fires applied in complex coalition and joint environments.

Prior to Fiscal Year 2007, funding to support the JFIIT Program originated in the Navy's Research, Development, Test and Evaluation (RDT&E) Program Element 0603857N. Subsequent realignment brought the JFIIT Program into oversight by Director Defense Research & Engineering (DDR&E)and converted the program element into a Defense-wide account.

Joint Requirements Oversight Council Memorandum (JROCM) 183-4, dated 8 Oct 04, directed U.S. Joint Forces Command (USJFCOM) to establish a Joint Fires Support Organization. JROCM 241-05, dated 3 Nov 05, validated the JFIIT mission. USJFCOM Directive Number 5170.2 dated 30 Nov 07, Charter for JFIIT, assigns JFIIT responsibility to improve Joint fires planning, training and execution as a critical capability for deployed joint warfighters.

The JFIIT mission is to improve the integration, interoperability, and operational effectiveness of Joint fires. JFIIT takes a holistic approach to improving Joint fires by providing solutions that produce effective target acquisition, command and control, and interoperable firing systems, thereby reducing fratricide and collateral damage. This results in not only near-term tactical identification of issues and solutions, but also informs and provides a foundation for short and long-term operational and tactical capabilities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604828D8Z: *Joint Fires Integration & Interoperability*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	16.972	16.637	16.764	-	16.764
Current President's Budget	15.511	16.637	9.290	-	9.290
Total Adjustments	-1.461	-	-7.474	-	-7.474
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.499	-			
• Other Program Adjustments	-0.962	-	-	-	-
• Defense Efficiency – JFCOM Task Force	-	-	-7.125	-	-7.125
• Defense Efficiency – Reports, Studies, Boards, and Commissions	-	-	-0.242	-	-0.242
• Defense Efficiency - Baseline Review	-	-	-0.087	-	-0.087
• Economic Assumptions	-	-	-0.020	-	-0.020

Change Summary Explanation

Defense Efficiency – JFCOM Task Force. As part of the Department of Defense reform agenda, a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions This is as a result of the decision to disestablish U.S. Joint Forces Command, and the Secretary of Defense's efficiency initiatives. Any additional changes for FY12 projects and objectives will be provided when available.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604828D8Z: *Joint Fires Integration & Interoperability*	PROJECT P857: *Joint Fires Integration & Interoperability*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P857: *Joint Fires Integration & Interoperability*	15.511	16.637	9.290	-	9.290	8.180	8.341	8.506	8.663	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Joint Fires Integration & Interoperability Team (JFIIT) funded by this program is a compact cell of unique Joint fires experts adding value to much larger Service investments in force elements delivering kinetic and non kinetic effects supporting ground operations. Services, Joint, and Combatant Commanders and their Staffs proactively seek JFIIT advice and assistance to improve the execution of combat fires applied in complex coalition and joint environments.

Prior to Fiscal Year 2007, funding to support the JFIIT Program originated in the Navy's Research, Development, Test and Evaluation (RDT&E) Program Element 0603857N. Subsequent realignment brought the JFIIT Program into oversight by Director Defense Research & Engineering (DDR&E) and converted the program element into a Defense-wide account.

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The JFIIT mission is to improve the integration, interoperability, and operational effectiveness of Joint fires. JFIIT takes a holistic approach to improving Joint fires by providing solutions that produce effective target acquisition, command and control, and interoperable firing systems, thereby reducing fratricide and collateral damage. This results in not only near-term tactical identification of issues and solutions, but also informs and provides a foundation for short and long-term operational and tactical capabilities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Fires Integration & Interoperability (JFIIT) Assessments and Evaluations	11.013	11.886	-
Description: Employ scientific methods to research, investigate, test, assess, and evaluate current and emerging Joint fires capabilities. These activities identify shortfalls and root cause, verify recommended solutions, and validate joint capabilities. The resultant empirical outcomes influence Joint Capability development in areas such as Joint Tactics, Techniques and Procedures; integration of service capabilities; and digital interoperability, and can inform acquisition decisions. The emphasis of JFIIT Assessment efforts is the evaluation of Joint fires and combat identification to provide Services and Agencies findings and recommendation based on quantifiable data in order to improve Joint fires. JFIIT collects and analyzes data and provides observations, findings, conclusions, and recommendations to identify Joint doctrine, training, and material solutions			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604828D8Z: *Joint Fires Integration & Interoperability*	PROJECT P857: *Joint Fires Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

and products that promote capability improvement. Accurate data is necessary to effectively develop solutions to identified problems. JFIIT provides a truth-based data collection capability to support a holistic approach to the overall improvement of Joint fires. Evaluations range from small, single-focus events to large, multi event/ venue exercises.

JFIIT conducts assessments in conjunction with Service and Combatant Command (COCOM) exercises, experiments, and test & evaluation events. The emphasis of this JFIIT effort is assessing Joint fires and combat identification capabilities to ensure that Services and Agencies field interdependent and interoperable systems and training. JFIIT Assessment efforts include verifying an accurate Joint environment is provided for realistic training that exercises one or more Joint tasks, assessing Joint context and Joint task execution while addressing the effectiveness of a Joint training program and identifying the need for continued support of Joint fires tactics, techniques and procedures (TTP) and doctrine. JFIIT assessments provide input to acquisition processes and enhance Joint development as programs are funded and developed.

The primary outputs and efficiencies include:
- Improvement in the Services' ability to employ Joint fires.
- Improved Joint Intelligence, Surveillance, and Reconnaissance (ISR) and integrated Air to Ground training at Home Station and the Combat Training Centers.
- An enhanced Joint operational environment at the Combat Training Centers that supports the execution of Joint tasks during service training and enhances JFIIT's ability to conduct assessments.
- Recommended solutions integrated within the Joint Staff Joint Capabilities Integration Development System (JCIDS) and OSD Joint C2 Capability Portfolio Manager (JC2 CPM) processes
- Identification of specific key performance parameters (KPPs) and key system attributes (KSAs) for new systems that meet Joint warfighter operational requirements to ensure Services and Agencies field interdependent and interoperable systems
- Published doctrine and Joint Tactics, Techniques and Procedures (TTP) to efficiently and effectively employ Joint forces at the tactical level
- Increased effectiveness and confidence in combat identification and a reduction in fratricide.

FY 2010 Accomplishments:
- In support of the US Army Training and Doctrine Command (TRADOC), developed Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF) recommendations and proposals for changes to unit Standard Operating Procedure and improvements to Brigade Combat Team pre-deployment training based on observations and analysis at various training events and venues. Benefits include better trained staffs, improved Joint TTP, and improved pre-deployment training.
- In support of US Army TRADOC and US Air Force Air Combat Command (ACC), improved the tactical application of Joint Intelligence, Surveillance, and Reconnaissance (ISR) and the integration of Air to Ground Operations at the National Training

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Center, Fort Irwin, CA, and Green Flag West, Nellis AFB, NV. Conducted assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments resulted in recommendations for improvements to Joint training. Assisted in developing and implementing architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during 10 rotations. Provided a post-event debrief to the venue staff and an Exercise Summary Report. Benefits include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of US Army TRADOC and USAF ACC, improved the tactical application of Joint ISR and the integration of Air to Ground Operations at the Joint Readiness Training Center, Fort Polk, LA, and Green Flag East, Barksdale AFB, LA. Conducted assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments resulted in recommendations for improvements to Joint training. Assisted in developing and implementing architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during 10 rotations. Provided a post-event debrief to the venue staff and an Exercise Summary Report. Benefits include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of US Army TRADOC and US Air Forces Europe (USAFE), improved the tactical application of Joint ISR and the integration of Air to Ground Operations at the Joint Multi-National Readiness Center, Hohenfels, Germany. Conducted assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments resulted in recommendations for improvements to Joint training. Assisted in developing and implementing architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during rotations. Provided a post-event debrief to the venue staff and an Exercise Summary Report. Benefits include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of USMC Marine Air-Ground Task Force – Training Command (MAGTF-TC) improved the tactical application of Joint ISR and the integration of Air to Ground Operations at the Marine Corps Air Ground Combat Center, Twenty-Nine Palms, CA. Conducted assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments resulted in recommendations for improvements to Joint training. Assisted in developing and implementing architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during multiple Enhanced Mojave Viper and Spartan Resolve rotations. Provided a post-event debrief to the venue staff and an Exercise Summary Report. Benefits include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continued to support the Coalition Combat Identification Advanced Combat Identification Demonstration (CCID ACTD) thru support of Bold Quest 10. Provided analytical support to a Military Utility Assessment of coalition and US Combat Identification Systems. Also, provided instrumentation, data collection, data capture, real-time mission monitoring, and feedback to participants via daily debriefings. Benefits include improved ability to assess various participating coalition and US systems, improved joint task execution, and an effective Military Utility Assessment of US Combat Identification systems while greatly reducing the timeline required to provide fact-based recommendations. - Continued support for irregular warfare in the capability and training assessment of special operations exercises and events in preparation for deployment and assisted in the identification of solutions in support of irregular warfare issues identified during these joint task execution and joint capabilities assessments. - Continued support to US Air Forces Central (USAFCENT formerly USCENTAF) and the 18th Air Support Operations Group (ASOG) in their training of Joint Terminal Attack Controllers (JTACs) and Joint Fires Officers (JFOs) teams during exercises Atlantic Strike. Provided system architecture and integration planning and execution, assessment of training capabilities, and feedback to the training audience and trainers. Benefits included increased combat readiness of Joint Terminal Attack Controllers (JTACs) and Joint Fires Officers (JFOs) as well as Air Support Operations Squadron (ASOS) personnel. - Led a short notice Tactical Cellular (TactiCell) Limited Operational Assessment (LOA) as a culminating event in a series of limited objective events. Provided tactical operators and led the assessment team in an effort to evaluate the military benefit of TactiCell to small unit operations. In addition, the TactiCell LOA demonstrated the value of using Universal Joint Tasks (UJT) to conduct tactical and technical assessments. - Supported Joint Integrated Air and Missile Defense Organization (JIAMDO) collecting data, developing and refining collection and display capabilities at their Joint Sensor Integration 2010 distributed test. JFIIT displayed, logged, and replayed the common operational pictures as seen at the Maritime Operations Center and the Carrier Battle Group collecting ground truth and Link 16 data at both nodes. JFIIT displayed data received from Global Command and Control System - Joint (GCCS-J) and Link 16 data from Air Defense System Integrator (ADSI) and logged it for further analysis. - Supported OUSD AT&L JI and DASD C3S2 by providing direct support to the Engineering Change Implementation Group (ECIG)in the continuing Digitally-Aided Close Air Support Coordinated Implementation (DACAS CI) effort, which oversees the DACAS engineering change management process, from engineering change proposal approval to block upgrade completion. Led the ECIG Operational Working Group (OWG) to formulate DACAS Block 1 test and assessment strategies and develop required			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
DACAS test measures. Primary or a contributing author for all DACAS test and assessment documents to include: The DACAS Test, Assessment, and Coordination of Fielding (TACOF) Strategy, the DACAS System of Systems Operational Context for Test (SOC-T), DACAS Data Management and Analysis Plan and DACAS Joint Test Threads. Provided SME support to a DACAS risk reduction test event utilizing the JITC DACAS test tool. - Participated in the Tactical Edge Data Solutions (TEDS) Joint Capability Technology Demonstration (JCTD) Limited Operational Utility Assessment (LOUA) as the emergent C2 Node or "unanticipated user" reuse case. Demonstrated the capability of a third party utilizing TEDS metadata artifact to develop a system that can consume and process a C2 Core-based position report message. Documented the development process and related issues for measures-based assessment inputs. In addition, JFIIT provided unique feedback and recommendations concerning more complex reuse cases that would require C2 Core extension methodologies.			
FY 2011 Plans: - Develop Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF) recommendations and proposals for changes to unit Standard Operating Procedure and improvements to Brigade Combat Team pre-deployment training based on observations and analysis throughout this process. Benefits will include better trained service members, improved Joint TTP, and improved pre-deployment training. - In support of, US Army Forces Command (FORSCOM) and US Air Force Air Combat Command (ACC), continue efforts to improve the tactical application of Joint ISR and the integration of Air to Ground Operations at the National Training Center, Fort Irwin, CA, and Green Flag West, Nellis AFB, NV. Conduct assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments to form recommendations for improvements to Joint training. Assist in developing and implementing architectures for integration and interoperability of systems. Provide feedback to exercise participants, observer trainers/controllers, and venue support staff during designated training rotations. Provide a post-event debrief to the venue staff and an Exercise Summary Report. Benefits will include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of USA FORSCOM and USAF ACC, continue efforts to improve the tactical application of Joint ISR and the integration of Air to Ground Operations at the Joint Readiness Training Center, Fort Polk, LA, and Green Flag East, Barksdale AFB, LA. Conduct assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments to form recommendations for improvements to Joint training. Assist in developing and implementing architectures for integration and interoperability of systems. Provide feedback to exercise participants, observer trainers/controllers, and venue support staff during designated training rotations. Provide a post-event debrief to the venue staff and an Exercise Summary			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Report. Benefits will include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of USA Training and Doctrine Command (TRADOC) and US Air Forces Europe (USAFE), continue efforts to improve the tactical application of Joint ISR and the integration of Air to Ground Operations at the Joint Multi-National Readiness Center, Hohenfels, Germany. Conduct assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments to form recommendations for improvements to Joint training. Assist in developing and implementing architectures for integration and interoperability of systems. Provide feedback to exercise participants, observer trainers/controllers, and venue support staff during select training rotations. Provide a post-event debrief to the venue staff and an Exercise Summary Report. Benefits will include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of USMC Marine Air-Ground Task Force – Training Command (MAGTF-TC) continue efforts to improve the tactical application of Joint ISR and the Integration of Air to Ground Operations at the Marine Corps Air Ground Combat Center, Twenty-Nine Palms, CA. Conduct assessments of Joint Training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments to form recommendations for improvements to joint Training. Assist in developing and implementing architectures for integration and interoperability of systems. Provide feedback to exercise participants, observer trainers/ controllers, and venue support staff during Spartan Advance and Spartan Resolve training exercises. Provide a post event debrief to the venue staff and an Exercise Summary Report. Continue efforts to define training support to Marine Corps Tactics and Operations Group (MCTOG). Benefits will include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of USN Naval Surface Warfare Center (NSWC), provide analytical support to netted sensor assessments conducted to determine how to integrate world-wide sensors on a Global Information Grid (GIG) to allow for a common operational picture. Also provide instrumentation, data collection, data capture, real-time mission monitoring, and feedback to participants via daily debriefings. Benefits will include improved integration of world-wide sensors and improved Joint interoperability. - Continue to support the Coalition Combat Identification Advanced Combat Identification Demonstration (CCID ACTD) Bold Quest events. Provide analytical support to a Military Utility Assessment of coalition and US Combat Identification Systems. Provide instrumentation, data collection, data capture, real-time mission monitoring, and feedback to participants via daily debriefings. Benefits will include improved ability to assess various participating coalition and US systems, improved joint task execution, and an effective Military Utility Assessment of US Combat Identification systems while greatly reducing the timeline required to provide fact-based recommendations.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continue support for irregular warfare in the capability and training assessment of special operations exercises and events in preparation for deployment and assist in the identification of solutions in support of irregular warfare issues identified during these joint task execution and joint capabilities assessments. - Continue support to USAFCENT and the various Air Support Operations Groups (ASOGs) in their training of Joint Terminal Attack Controllers (JTACs) and Joint Fires Officers (JFOs) teams. Provide planning and execution support, assessment of training capabilities, and feedback to the training audience and trainers. Benefits will include increased combat readiness of JTACs and JFOs as well as Air Support Operations Squadron (ASOS) personnel. - In support of the Joint Integrated Missile Defense Organization (JIAMDO), provide analysis support to assess technology integration and interoperability during JIAMDO Joint Sensor Integration event. Benefits will include improvements in Joint Sensor Integration to provide an Integrated Air and Missile Defense Common Operational Picture. - In support of the Joint Fires Support Executive Steering Committee, conduct an airspace control interoperability analysis. Benefits will include recommendations for airspace control Tactics, Techniques, and Procedures in the areas of standardization and digital interoperability and development of associated Universal Joint Tasks to standardize the airspace control training. - Continue support to Joint Integrated Air and Missile Defense Organization (JIAMDO) Joint Integrated Sensor testing with data collection, analysis and display using JFIIT developed collection and analysis tools Joint fires Subject Matter Experts and analysts. - Continue support to OUSD AT&L Joint Integration and DASD C3S2 by providing direct support to the Engineering Change Implementation Group (ECIG)in the continuing Digitally-Aided Close Air Support Coordinated Implementation (DACAS CI) effort. Participate in the 2011 DACAS risk reduction test event employing the JITC test tool. Continue Block 1 efforts and assist in the development of Block 2 engineering change proposals and all required Block 2 test and assessment documentation. ***FY 2012 Plans:*** - JFIIT Mission transitions to Joint Fires Capability Assessments in FY12			
Title: Joint Fires Integration & Interoperability (JFIIT) Capabilities Development ***Description:*** The emphasis of the JFIIT Capabilities Development effort is continued development of Joint Fires and combat identification capabilities. JFIIT focuses on current and emergent Joint fires capabilities such as tactics, techniques, and procedures (TTP), Systems, and System of Systems. JFIIT is working with the Combat Training Centers to enhance Joint	4.498	4.751	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
training for evolving Joint fires issues identified during the rotational units pre-deployment exercises as the basis to develop tactical level recommendations to address the operational gaps and seams. To support Service and Component Command (COCOM) capability development efforts, JFIIT develops Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF) Change Recommendations; improvements in coordinating fires, command and control, and firing systems interoperability resulting in increased effectiveness and efficiency; and provides technical expertise in identifying Joint solutions to capability gaps. The primary outputs and efficiencies include: - Validated Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF) Joint fires recommendations - Improvements in Joint Terminal Attack Controller (JTAC) and Joint Fires Observer equipment and Tactics, Techniques and Procedures (TTP) - Appraisals of service venues joint context and ability to support joint training - Resolution of Combat Identification and Joint Close Air Support Action Plan issues - Publication of Tactical Leader's Joint Intelligence, Surveillance & Reconnaissance (ISR) Handbook - Accreditation/certification for Joint fires context and training capability of service venues - Recommendations for tactical Joint fires improvement solutions - Recommendations for system integration and interoperability - Optimum utilization of currently fielded systems as evidenced through feedback from deployed forces - Ability to include Joint context during new system acquisition or development - New system capability that meets current Joint operational requirements - Proposed Joint fires related TTP and doctrine - Increased effectiveness and confidence in combat identification as evidenced through feedback from deployed forces - Reduced collateral damage and decreased number of fratricide incidents across the force - Improved capabilities to train forces in a Joint environment - Development of Joint fires related Universal Joint Tasks (UJT) - Updates and revisions to Joint fires related doctrine, TTP, and other Joint publications. ***FY 2010 Accomplishments:*** - In support of the US Army Training and Doctrine Command (TRADOC), developed Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF) recommendations and proposals for changes to unit Standard Operating Procedure and improvements to Brigade Combat Team pre-deployment training based on observations and analysis at various training events and venues. Benefits include better trained staffs, improved Joint TTP, and improved pre-deployment training.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- In support of US Army TRADOC and US Air Force Air Combat Command (ACC), improved the tactical application of Joint Intelligence, Surveillance, and Reconnaissance (ISR) and the integration of Air to Ground Operations at the National Training Center, Fort Irwin, CA, and Green Flag West, Nellis AFB, NV. Conducted assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments resulted in recommendations for improvements to Joint training. Assisted in developing and implementing architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during 10 rotations. Provided a post-event debrief to the venue staff and an Exercise Summary Report. Benefits include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of US Army TRADOC and USAF ACC, improved the tactical application of Joint ISR and the integration of Air to Ground Operations at the Joint Readiness Training Center, Fort Polk, LA, and Green Flag East, Barksdale AFB, LA. Conducted assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments resulted in recommendations for improvements to Joint training. Assisted in developing and implementing architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during 10 rotations. Provided a post-event debrief to the venue staff and an Exercise Summary Report. Benefits include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of US Army TRADOC and US Air Forces Europe (USAFE), improved the tactical application of Joint ISR and the integration of Air to Ground Operations at the Joint Multi-National Readiness Center, Hohenfels, Germany. Conducted assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments resulted in recommendations for improvements to Joint training. Assisted in developing and implementing architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during rotations. Provided a post-event debrief to the venue staff and an Exercise Summary Report. Benefits include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of USMC Marine Air-Ground Task Force – Training Command (MAGTF-TC) improved the tactical application of Joint ISR and the integration of Air to Ground Operations at the Marine Corps Air Ground Combat Center, Twenty-Nine Palms, CA. Conducted assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments resulted in recommendations for improvements to Joint training. Assisted in developing and implementing architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/ controllers, and venue support staff during multiple Enhanced Mojave Viper and Spartan Resolve rotations. Provided a post-event			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604828D8Z: *Joint Fires Integration & Interoperability*	PROJECT P857: *Joint Fires Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

debrief to the venue staff and an Exercise Summary Report. Benefits include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center.

- Continued to support the Coalition Combat Identification Advanced Combat Identification Demonstration (CCID ACTD) thru support of Bold Quest 10. Provided analytical support to a Military Utility Assessment of coalition and US Combat Identification Systems. Also, provided instrumentation, data collection, data capture, real-time mission monitoring, and feedback to participants via daily debriefings. Benefits include improved ability to assess various participating coalition and US systems, improved joint task execution, and an effective Military Utility Assessment of US Combat Identification systems while greatly reducing the timeline required to provide fact-based recommendations.

- Continued support for irregular warfare in the capability and training assessment of special operations exercises and events in preparation for deployment and assisted in the identification of solutions in support of irregular warfare issues identified during these joint task execution and joint capabilities assessments.

- Continued support to US Air Forces Central (USAFCENT formerly USCENTAF) and the 18th Air Support Operations Group (ASOG) in their training of Joint Terminal Attack Controllers (JTACs) and Joint Fires Officers (JFOs) teams during exercises Atlantic Strike. Provided system architecture and integration planning and execution, assessment of training capabilities, and feedback to the training audience and trainers. Benefits included increased combat readiness of Joint Terminal Attack Controllers (JTACs) and Joint Fires Officers (JFOs) as well as Air Support Operations Squadron (ASOS) personnel.

- Led a short notice Tactical Cellular (TactiCell) Limited Operational Assessment (LOA) as a culminating event in a series of limited objective events. Provided tactical operators and led the assessment team in an effort to evaluate the military benefit of TactiCell to small unit operations. In addition, the TactiCell LOA demonstrated the value of using Universal Joint Tasks (UJT) to conduct tactical and technical assessments.

- Supported Joint Integrated Air and Missile Defense Organization (JIAMDO) collecting data, developing and refining collection and display capabilities at their Joint Sensor Integration 2010 distributed test. JFIIT displayed, logged, and replayed the common operational pictures as seen at the Maritime Operations Center and the Carrier Battle Group collecting ground truth and Link 16 data at both nodes. JFIIT displayed data received from Global Command and Control System - Joint (GCCS-J) and Link 16 data from Air Defense System Integrator (ADSI) and logged it for further analysis.

- Supported OUSD AT&L JI and DASD C3S2 by providing direct support to the Engineering Change Implementation Group (ECIG)in the continuing Digitally-Aided Close Air Support Coordinated Implementation (DACAS CI) effort, which oversees the

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
DACAS engineering change management process, from engineering change proposal approval to block upgrade completion. Led the ECIG Operational Working Group (OWG) to formulate DACAS Block 1 test and assessment strategies and develop required DACAS test measures. Primary or a contributing author for all DACAS test and assessment documents to include: The DACAS Test, Assessment, and Coordination of Fielding (TACOF) Strategy, the DACAS System of Systems Operational Context for Test (SOC-T), DACAS Data Management and Analysis Plan and DACAS Joint Test Threads. Provided SME support to a DACAS risk reduction test event utilizing the JITC DACAS test tool. - Participated in the Tactical Edge Data Solutions (TEDS) Joint Capability Technology Demonstration (JCTD) Limited Operational Utility Assessment (LOUA) as the emergent C2 Node or "unanticipated user" reuse case. Demonstrated the capability of a third party utilizing TEDS metadata artifact to develop a system that can consume and process a C2 Core-based position report message. Documented the development process and related issues for measures-based assessment inputs. In addition, JFIIT provided unique feedback and recommendations concerning more complex reuse cases that would require C2 Core extension methodologies. ***FY 2011 Plans:*** - Develop Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF) recommendations and proposals for changes to unit Standard Operating Procedure and improvements to Brigade Combat Team pre-deployment training based on observations and analysis throughout this process. Benefits will include better trained service members, improved Joint TTP, and improved pre-deployment training. - In support of, US Army Forces Command (FORSCOM) and US Air Force Air Combat Command (ACC), continue efforts to improve the tactical application of Joint ISR and the integration of Air to Ground Operations at the National Training Center, Fort Irwin, CA, and Green Flag West, Nellis AFB, NV. Conduct assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments to form recommendations for improvements to Joint training. Assist in developing and implementing architectures for integration and interoperability of systems. Provide feedback to exercise participants, observer trainers/controllers, and venue support staff during designated training rotations. Provide a post-event debrief to the venue staff and an Exercise Summary Report. Benefits will include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of USA FORSCOM and USAF ACC, continue efforts to improve the tactical application of Joint ISR and the integration of Air to Ground Operations at the Joint Readiness Training Center, Fort Polk, LA, and Green Flag East, Barksdale AFB, LA. Conduct assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments to form recommendations for improvements to Joint training. Assist in developing and implementing architectures			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
for integration and interoperability of systems. Provide feedback to exercise participants, observer trainers/controllers, and venue support staff during designated training rotations. Provide a post-event debrief to the venue staff and an Exercise Summary Report. Benefits will include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of USA Training and Doctrine Command (TRADOC) and US Air Forces Europe (USAFE), continue efforts to improve the tactical application of Joint ISR and the integration of Air to Ground Operations at the Joint Multi-National Readiness Center, Hohenfels, Germany. Conduct assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments to form recommendations for improvements to Joint training. Assist in developing and implementing architectures for integration and interoperability of systems. Provide feedback to exercise participants, observer trainers/controllers, and venue support staff during select training rotations. Provide a post-event debrief to the venue staff and an Exercise Summary Report. Benefits will include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of USMC Marine Air-Ground Task Force – Training Command (MAGTF-TC) continue efforts to improve the tactical application of Joint ISR and the Integration of Air to Ground Operations at the Marine Corps Air Ground Combat Center, Twenty-Nine Palms, CA. Conduct assessments of Joint Training through collection and analysis of data on Universal Joint Tasks. Trend analysis of assessments to form recommendations for improvements to joint Training. Assist in developing and implementing architectures for integration and interoperability of systems. Provide feedback to exercise participants, observer trainers/ controllers, and venue support staff during Spartan Advance and Spartan Resolve training exercises. Provide a post event debrief to the venue staff and an Exercise Summary Report. Continue efforts to define training support to Marine Corps Tactics and Operations Group (MCTOG). Benefits will include improved ability to execute joint tasks at service training venues and an improved Joint operational environment and Joint context at a Service Combat Training Center. - In support of USN Naval Surface Warfare Center (NSWC), provide analytical support to netted sensor assessments conducted to determine how to integrate world-wide sensors on a Global Information Grid (GIG) to allow for a common operational picture. Also provide instrumentation, data collection, data capture, real-time mission monitoring, and feedback to participants via daily debriefings. Benefits will include improved integration of world-wide sensors and improved Joint interoperability. - Continue to support the Coalition Combat Identification Advanced Combat Identification Demonstration (CCID ACTD) Bold Quest events. Provide analytical support to a Military Utility Assessment of coalition and US Combat Identification Systems. Provide instrumentation, data collection, data capture, real-time mission monitoring, and feedback to participants via daily debriefings. Benefits will include improved ability to assess various participating coalition and US systems, improved joint task execution, and			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604828D8Z: *Joint Fires Integration & Interoperability*	PROJECT P857: *Joint Fires Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
an effective Military Utility Assessment of US Combat Identification systems while greatly reducing the timeline required to provide fact-based recommendations. - Continue support for irregular warfare in the capability and training assessment of special operations exercises and events in preparation for deployment and assist in the identification of solutions in support of irregular warfare issues identified during these joint task execution and joint capabilities assessments. - Continue support to USAFCENT and the various Air Support Operations Groups (ASOGs) in their training of Joint Terminal Attack Controllers (JTACs) and Joint Fires Officers (JFOs) teams. Provide planning and execution support, assessment of training capabilities, and feedback to the training audience and trainers. Benefits will include increased combat readiness of JTACs and JFOs as well as Air Support Operations Squadron (ASOS) personnel. - In support of the Joint Integrated Missile Defense Organization (JIAMDO), provide analysis support to assess technology integration and interoperability during JIAMDO Joint Sensor Integration event. Benefits will include improvements in Joint Sensor Integration to provide an Integrated Air and Missile Defense Common Operational Picture. - In support of the Joint Fires Support Executive Steering Committee, conduct an airspace control interoperability analysis. Benefits will include recommendations for airspace control Tactics, Techniques, and Procedures in the areas of standardization and digital interoperability and development of associated Universal Joint Tasks to standardize the airspace control training. - Continue support to Joint Integrated Air and Missile Defense Organization (JIAMDO) Joint Integrated Sensor testing with data collection, analysis and display using JFIIT developed collection and analysis tools Joint fires Subject Matter Experts and analysts. - Continue support to OUSD AT&L Joint Integration and DASD C3S2 by providing direct support to the Engineering Change Implementation Group (ECIG)in the continuing Digitally-Aided Close Air Support Coordinated Implementation (DACAS CI) effort. Participate in the 2011 DACAS risk reduction test event employing the JITC test tool. Continue Block 1 efforts and assist in the development of Block 2 engineering change proposals and all required Block 2 test and assessment documentation. ***FY 2012 Plans:*** - JFIIT Mission transitions to Joint Fires Capability Assessments in FY12			
Title: Joint Fires Integration & Interoperability (JFIIT)- Joint Fires Capability Assessments	-	-	9.290

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604828D8Z: *Joint Fires Integration & Interoperability*	PROJECT P857: *Joint Fires Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Employ scientific methods to research, investigate, test, assess, and evaluate current and emerging Joint fires capabilities. These activities identify shortfalls and root cause, verify recommended solutions, and validate joint capabilities. The resultant empirical outcomes influence Joint Capability development in areas such as Joint Tactics, Techniques and Procedures; integration of service capabilities; and digital interoperability, and can inform acquisition decisions. The emphasis of JFIIT Assessment efforts is the evaluation of Joint fires and combat identification to provide Services and Agencies findings and recommendations based on quantifiable data in order to improve Joint fires. JFIIT collects and analyzes data and provides observations, findings, conclusions, and recommendations to identify Joint doctrine, tactics, techniques, and procedures (TTP) and material solutions and products that promote capability improvement. Evaluations range from small, single-focus events to large, multi event/ venue exercises. JFIIT conducts assessments in conjunction with Service and Combatant Command (COCOM) exercises, experiments, and test & evaluation events. The emphasis of this JFIIT effort is assessing Joint fires and combat identification capabilities to ensure that Services and Agencies field interdependent and interoperable systems. The primary outputs and efficiencies include: - Improvement in the Services' ability to employ Joint fires. - Recommendations for system integration and interoperability. - Ability to include Joint context during new system acquisition or development. - Development of Joint fires related Universal Joint Tasks (UJT). - Updates and revisions to Joint fires related doctrine, TTP, and other Joint publications. - Development and refinement of analytical tools (i.e. Data Collection Architecture for Analytical Feedback (DCAAF), Joint Windows-based Warfare Assessment Model (JWinWAM)) - Recommended solutions integrated within the Joint Staff Joint Capabilities Integration Development System (JCIDS) and OSD Joint C2 Capability Portfolio Manager (JC2 CPM) processes - Identification of specific key performance parameters (KPPs) and key system attributes (KSAs) for new systems that meet Joint warfighter operational requirements to ensure Services and Agencies field interdependent and interoperable systems - Increased effectiveness and confidence in combat identification and a reduction in fratricide. ***FY 2012 Plans:*** - Provide analytical support to a Military Utility Assessment of coalition and US Combat Identification Systems. Provide instrumentation, data collection, data capture, real-time mission monitoring, and feedback to participants via daily debriefings. Benefits will include improved ability to assess various participating coalition and US systems, improved joint task execution, and			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604828D8Z: *Joint Fires Integration & Interoperability*	PROJECT P857: *Joint Fires Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
an effective Military Utility Assessment of US Combat Identification systems while greatly reducing the timeline required to provide fact-based recommendations. - Provide analytical support to assess technology integration and interoperability during Joint Sensor Integration events. Benefits will include improvements in Joint Sensor Integration to provide an Integrated Air and Missile Defense Common Operational Picture. - In support of the Joint Fires Support Executive Steering Committee, conduct an airspace control interoperability analysis. Benefits will include recommendations for airspace control Tactics, Techniques, and Procedures in the areas of standardization and digital interoperability and development of associated Universal Joint Tasks to standardize the airspace control training. - Provide support to Joint Integrated Sensor testing with data collection, analysis and display using JFIIT developed collection and analysis tools Joint - Continue Joint Windows-based Warfare Assessment Model (JWinWAM) software and development to support JFIIT assessment activities and the efforts of other government agencies as directed. - - Continue to develop the tactical Universal Joint Task (UJT) for airspace management (TA 3.3.2 Control Tactical Airspace) and associated Additional Task Detail (ATD) that decomposes and amplifies the UJT. This UJT and the ATDs have been posted to the Joint Doctrine, Education, & Training Information System (JDEIS). - - Continued to refine ATDs for TA 3.2.2 Conduct Close Air Support (CAS), TA 3.2.1 Conduct Fire Support, and TA 2 Share Intelligence. - Continued development of the Tier 1 Joint Close Air Support (CAS) Joint Mission Thread (JMT) and beginning of the Tier 1 Joint Fires JMT.			
Accomplishments/Planned Programs Subtotals	15.511	16.637	9.290

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604828D8Z: *Joint Fires Integration & Interoperability*	PROJECT P857: *Joint Fires Integration & Interoperability*

E. Performance Metrics

JFIIT delivers Joint solutions for tactical forces deployed to Combatant Commands (COCOMs). Deliverables may include: discrete improvements to training processes; doctrine; Tactics, Techniques, & Procedures (TTPs); and/or technical system performance specifications and standards; validated Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF) Joint fires recommendations; timely delivery of quality feedback to exercise participants; or improvements to Joint context of a training venue. JFIIT works with USD AT&L/DDR&E, Services and COCOMs to approve the annual agenda of work and validate results.

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604828D8Z: *Joint Fires Integration & Interoperability*	PROJECT P857: *Joint Fires Integration & Interoperability*

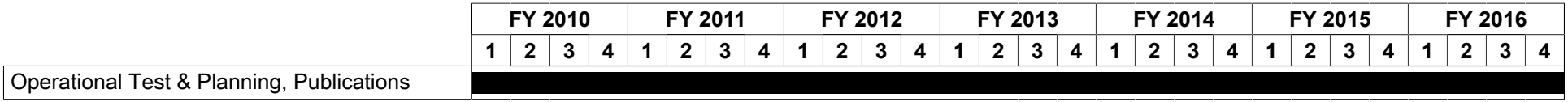

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604828D8Z: *Joint Fires Integration & Interoperability*	**PROJECT** P857: *Joint Fires Integration & Interoperability*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Operational Test & Planning, Publications	1	2010	4	2016

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0605017D8Z: *Reduction of Total Ownership Cost (RTOC)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	22.870	20.310	-	-	-	-	-	-	-	0.000	43.180
017: *RTOC*	22.870	20.310	-	-	-	-	-	-	-	0.000	43.180

Note

Defense Efficiency – Baseline Review. As part of the Secretary of Defense's efficiency reform agenda for the Department, a zero-based review of the organization's programs to align resources to the most critical priorities and eliminate lower priority functions was performed. As part of this initiative, the R-TOC program will complete FY11 efforts, and will be terminated in FY12.

A. Mission Description and Budget Item Justification

The Under Secretary of Defense (Acquisition, Technology & Logistics) defined the mission for the Reduction in Total Ownership Cost (R-TOC) program as the reduction of ownership costs for defense systems. The R-TOC program funded activities and initiatives that:

1. Increased the reliability, maintainability, supportability--and thus increased readiness--of new or existing defense systems.
2. Reduced logistics footprint.
3. Generated future cost reductions in total ownership cost.

Individual Service Projects are complete efforts within themselves that yield complete developments/redesigns which the Services are committed to put into production and operation. The initiatives optimized cost avoidance, ultimately reducing the operating and support costs for systems. Each project was evaluated against a rigorous set of criteria to assess its viability and probability of success. Individual projects addressed specific Service needs and high Operations and Support (O&S) cost areas.

The Department set a FY 2010 R-TOC goal of reducing the total defense systems inflation increase in O&S cost by 30 percent between FY 2004 and FY 2010. This PE provided a major portion of the program funding to achieve this goal. The successful demonstration of the R-TOC program initiatives stimulated additional initiatives by the Services to achieve even greater cost avoidance. In FY12 the program devolves to the Services.

Individual R-TOC Project Management will continue to rest with the Services and their Project Managers after being devolved. Each Service has an active R-TOC Point of Contact (POC) for the initial interface between the Office of the Secretary of Defense (OSD) and the R-TOC Project Managers.

The average Return on Investment (ROI) for FY 2010 projects (based on discounted cash flow calculations) is approximately 80:1 with $1.333 billion in cost avoidance across the life cycle of the affected systems. The average ROI for the FY 2011 projects (based on discounted cash flow calculations) is approximately 53:1 with $2.049 billion in cost avoidance across the life cycle of the affected systems.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0605017D8Z: *Reduction of Total Ownership Cost (RTOC)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	24.647	20.310	26.364	-	26.364
Current President's Budget	22.870	20.310	-	-	-
Total Adjustments	-1.777	-	-26.364	-	-26.364
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.000	-			
• SBIR/STTR Transfer	-0.540	-			
• Other Program Adjustments	-0.237	-	-	-	-
• Defense Efficiency – Baseline Review	-	-	-26.364	-	-26.364

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Secretary of Defense's efficiency reform agenda for the Department, a zero-based review of the organization's programs to align resources to the most critical priorities and eliminate lower priority functions was performed. As part of this initiative, the R-TOC program will be terminated in FY12.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0605017D8Z: *Reduction of Total Ownership Cost (RTOC)*	PROJECT 017: *RTOC*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
017: *RTOC*	22.870	20.310	-	-	-	-	-	-	-	0.000	43.180
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Under Secretary of Defense, Acquisition, Technology & Logistics (USD(AT&L), defined the mission for the Reduction in Total Ownership Cost (R-TOC) program as the reduction of ownership costs for defense systems. The R-TOC program funded activities and initiatives that:

1. Increased the reliability, maintainability, supportability and thus increased readiness of new or existing defense systems.
2. Reduced logistics footprint.
3. Generated future cost reductions in total ownership cost.

These individual initiatives were complete efforts within themselves that yield complete redesigns which the Services were committed to put into production and operation. The initiatives optimize cost avoidance, ultimately reducing the operating and support (O&S) costs for systems.

The Department set an FY 2010 R-TOC goal of reducing the total defense systems inflation increase in operations and support cost by 30 percent between FY 2004 (baseline) and FY 2010. In FY11 OSD will transition the program to the Services. OSD will only fund those projects that will be completed during FY11. There will be no R-TOC PE funded carry-over projects into FY12. The Services will assume responsibility for the program in FY12.

The average Return on Investment (ROI) for FY 2009 projects (based on discounted cash flow calculations) is approximately 45:1 with $1.174 billion in cost avoidances across the life cycle of the affected systems. The average ROI for the FY 2010 projects (based on discounted cash flow calculations) is approximately 80:1 with $1.333 billion in cost avoidances across the life cycle of the affected systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Reduction of Total Ownership Cost Efforts	22.870	20.310	-
Description: In FY 2010, the Services completed all FY2009 projects and started eighteen new projects. Cost avoidances established for the projects listed below are based on engineering estimates of the benefits provided by project implementations. Sources of cost avoidances are defined as part of the project submittal and come from any O&S cost source (fewer spares, lower maintenance hours, faster turnaround times, reduced scheduled maintenance, reliability/maintainability/supportability problems, etc.).			
FY 2010 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0605017D8Z: *Reduction of Total Ownership Cost (RTOC)*	PROJECT 017: *RTOC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Completed all projects begun in FY 2009 and started eighteen new projects for FY 2010. The objective of each of the Service projects, listed below, is the reduction of operations and support costs for the affected systems. ROI is the primary performance metric used to assess projects and for the R-TOC initiative. Project plans include a cost/benefit analysis, which was based on discounted cash flow calculations of project investment costs and projected cost avoidances. Other factors were also considered as the Services developed their ranked order of projects. Improvements in reliability, maintainability, and supportability provided additional criteria for project selection. OMB discounted rates were used to provide real comparisons of future value against current uses of resources. Projected cost avoidances are based on engineering estimates of the benefits provided by project implementations. Updated ROI calculations are part of the required semi-annual project reports to provide tracking of this metric. The estimated ROI for FY 2010 projects (based on discounted cash flow calculations) is 80:1 with $1.333 billion in cost avoidances across the life cycle of the affected systems. Army Projects: Completed all projects begun in FY 2009 and initiated four new projects. The Common Avionics Architecture System (Unmanned Aerial System (UAS) Prognostic Sensors was proposed because the Army experienced unanticipated catastrophic failures in the UAS fleet. The proposed solution was to develop and prototype sensors for the UAS to predict future problems before catastrophic failures. The HH-60 Forward Looking Infra-Red (FLIR) project was proposed because the Army experienced frequent damage to the FLIR turret on the Blackhawk helicopter. A proposed a redesign to the (FLIR) turret is being implemented that will prevent damage. The Advanced Quicklook Guardrail (AQL) Radio Frequency (RF) Antenna Panel project was proposed because the Army experienced a higher than expected failure rate for RF antenna due to engine exhaust heating on the Guardrail aircraft. The solution is to design a replacement antenna that can better withstand the engine exhaust heat. The Special Operations Aviation (SOA) Common Avionics Architecture System (CAAS) Training Simulation project was developed in order to streamline software upgrades and maintenance, the Army demonstrated a common interface for the CAAS software which reduced O&M for software maintenance. The Multiple Launch Rocket System (MRLS) M270A1 V1Fire Control System (FCS) causes the Army to spend $57M annually for sustainment and to mitigate hardware and software obsolescence issues. The solution was to replace two obsolete electronic cards by upgrading other electronic cards on the vehicle. The UH-72A Main Rotor Blade Coating project evaluated and implemented a coating process to improve the reliabilityof the UH-72. The new coating and process will help protect the main rotor blade in harsh environments. The Hellfire Multi-Mode Warhead project developed a new combined warhead to accept three different warhead configurations into a single package for the Hellfire missile. Navy Projects: In FY10 the Navy completed ten projects and started two new Common Ship projects. The primary theme for FY10 projects was the improvement of maintenance technologies that would reduce operational cost and add efficiency to surface ships. NAVSEA had several common ship projects which provided underwater hull condition-based maintenance, reduced maintenance requirements and improved warfighting readiness. NAVSEA also introduced the use of vapor corrosion inhibitors in ship voids and reduced the effects of corrosion causing moisture within voids in order to double the maintenance			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0605017D8Z: *Reduction of Total Ownership Cost (RTOC)*	PROJECT 017: *RTOC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
interval. These projects included coating surface ship propellers, high solids antifoulant coating , cathodic protection of aluminum, surface profile tool, and underwater hull condition-based maintenance. NAVSEA worked with NAVAIR to design a new machine hinge replacement for Main Landing Gear door hinges to meet current loading requirements. Other projects were for aircraft systems and the aviation support equipment that provided support for them. These projects included F/A-18 SRA pinpoint routines, spectrometer modification, Common Management Information System (CMIS) TDSA-KITMIS migration, H-60 blade deice controller, and F/A-18E/F fiber optic cable restore. The Littoral Combat System (LCS) Program Management Office (PMO) developed and fielded the S1000/Shared Courseware Object Reference Model (SCORM) in order to integrate three separate training logistics, and technical data databases into one common shared database that reduced life cycle O&S costs by having only one repository for logistics and tech data. Air Force Projects: Completed all FY09 projects and began twelve new projects. The F-119 and F-110 engines used on F-16and F-22 had a high incidence of damage beyond their bendable limits due to foreign object damage or domestic object damage. The proposed solution was to develop and validate through prototyping a process for repairing single titanium and nickel blades that are part of the Integrally Bladed Rotor (IBR) and develop a process to reduce the need to replace the entire IBR assembly, if a single blade is damaged. Today, engine maintenance intervals are conservatively based on “typical” mission usage. This assumption results in engines that have been used for benign missions being removed from aircraft with significant life remaining and engines that have been used for abusive missions remain on wing too long, resulting in Unscheduled Engine Removals and In Flight Shutdowns. By making the Engine Structural Integrity Program intervals condition-based instead of time-based would extend engine removal intervals to 5,000 hours thereby reducing O&S costs. The Field Backstop Test Data Collection and Analysis System solved the problem associated with depot maintenance of F-16 avionics boxes sent from the field to the depot for repair. The purpose of this effort was to develop a system for the collection, storage, retrieval, and analysis of F-16 Improved Avionics Intermediate Shop (IAIS) field backshop test data. DoD depots did not possess a clean, safe, environmental friendly and energy efficient method to remove Tungsten Carbide Cobalt (WC/Co) & Tungsten Carbide Cobalt Chrome (WC/Co/Cr) coatings from high strength steel parts. This project sought to expand the insertion of technology for the removal of WC/Co and WC/Co/Cr which was being applied to landing gear components. The USAF condemned many C-5 yokes, B-52 outer cylinders, KC-135 nose outer cylinders, and light-weightaircraft aluminum strut outer cylinders, which cost approximately $3M per year. A proposed solution was to develop and prototype a process to repair these landing gear cylinders using the magnetron sputtering process. The USAF destructively removed expensive thermal tiles to measure resistive card in the B-2 Hot Trailing Edge area. The proposed solution was to provide an organic solution for low observable maintainability of aircraft coatings by developing and prototyping a portable tool to organically inspect low observable tiles. ***FY 2011 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0605017D8Z: *Reduction of Total Ownership Cost (RTOC)*	PROJECT 017: *RTOC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
In FY11 OSD will transition the program to the Services. OSD will only fund those projects that will be completed during FY11. There will be no R-TOC funded carry-over projects into FY12. The Services will assume responsibility for the program in FY12. The primary objective for the projects listed below will continue to be the reduction of operations and support (O&S) costs for the affected systems. Army Projects: The Army will continue six FY10 projects and completed these projects in FY11. The HH-60 FLIR work will continue to redesign the HH-60 FLIR turret to prevent damage during hovering and landings by reducing the size of the turret. The SOF CAAS will continue work to demonstrate a common interface for the Common Avionics Architecture System (CAAS) software. The goal is to integrate the CAAS interface solution into existing and future virtual flight training simulators significantly reducing the costs to modify, recompile and port training simulation software. The UH-72A project will continue to evaluate and implement a coating process to improve the reliability of the UH-72A main rotor blade in harsh environments. The Hellfire Warhead missile need to carry multiple warhead models adds unnecessary operational burden. The Army is proposing to develop a new combined warhead to accept three different warhead configurations into a single package for the Hellfire missile replacing the current three variants. Navy Projects: The Navy continues one FY10 project and will start and complete 10 new projects in FY11. The primary themes for FY11 are power conservation, better corrosion control through improved surface coatings, and maintenance cost reductions through streamlining. Currently general illumination standards employ the use of fluorescent and incandescent lighting fixtures with short service life and are energy inefficient. One of the conservation projects include the replacement of legacy fluorescent lighting with LED lighting on test ship (USS PEARL HARBOR) to lower maintenance and energy costs,. LHA-1 and LHD-1 Class Ships have directional stability issues. Tests with other types of ships have shown that appendages installed to eliminate these maneuvering issues reduce total energy costs by improving the steering. The Navy proposes to reduce weight and maintenance costs by eliminating some current Electronic Cooling Water systems on DDG 51 and CG 47 Class Surface Combatants to reduce weight and chill water system load requirements. These systems will use the ship's chilled water instead of demineralized electronic cooling water. To control corrosion O&S costs the Navy proposes the use of prototype cameras in shipboard tank voids to analyze condition and structural degradation eliminating the need to open tank. The Navy also proposes to test alternative corrosion coatings on shipboard crash-cranes to reduce excessive corrosion related maintenance costs. The Navy is proposing to redesign the night vision goggles used in tactical aircraft because ½ AA batteries are very expensive compared to AA alkaline batteries and are not readily available aboard ship or while forward deployed. The deliverable will be a redesigned AN/AVS-9 mount capable of using AA alkaline batteries, increased durability, and better EMI performance. NAVSEA is introducing the usage of conditioned based maintenance practices in the new LCS class ships and mission modules to help control O&S costs. NAVSEA is proposing upgrading high-maintenance components in shipboard munitions transporters to reduce maintenance requirements.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0605017D8Z: *Reduction of Total Ownership Cost (RTOC)*	PROJECT 017: *RTOC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
This project will extend the periodic maintenance to a 5-year minimum and extend the service life of current assets to 25 years. NAVAIR is proposing to establish common procedures and practices for Airborne ForceNet (Afn) network maintenance, trouble shooting and updates. This will be applied immediately to EP-3, and P-3AIP platforms and will extend to P-8A, and BAMS. The Next Gen Navy Cash project will leverage the industry electronic banking advances to streamline shipboard banking and expenditure transactions for Sailors at sea. The potential savings are equivalent to 31% of existing program costs. Air Force Projects: The USAF will continue eleven projects started in FY10 and complete the projects in FY11. Nine projects are applicable across multiple systems to leverage investment funding. The projects that continue are improving maintenance of the F-119 jet engine Integrally Bladed Rotor, eight projects that focus on improving mid-level and depot level processes, and identify and qualify laser based alternatives to TIG, MIG, & EB manual welding processes for repairing F-15 and F-16,			
Accomplishments/Planned Programs Subtotals	22.870	20.310	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

There was an annual USD(AT&L) call for proposed project plans in October. Projects are submitted by the Services annually in January. The project plan format was provided with the call for submission of Service projects. Each project plan contained:

1. Problem statement
2. Impact statement
3. Technical description
4. Risk analysis
5. Proposed phases
6. Expected deliverables and results or outcomes
7. Program management
8. Cost/benefit analysis
9. Schedule
10. Implementation plan

The project evaluation criteria were also provided as part of the call for use by the Services in arriving at their prioritized project list.

In FY12 the Services will be responsible for implementing procedures for selecting projects and funding the R-TOC program.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0605017D8Z: *Reduction of Total Ownership Cost (RTOC)*	**PROJECT** 017: *RTOC*

E. Performance Metrics

Not applicable.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0605017D8Z: *Reduction of Total Ownership Cost (RTOC)*	PROJECT 017: *RTOC*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RTOC	TBD	TBD:TBD	24.447	20.310		-		-		-	16.104	60.861	
		Subtotal	24.447	20.310		-		-		-	16.104	60.861	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	24.447	20.310		-		-		-	16.104	60.861	

Remarks

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0303191D8Z: *Joint Electromagnetic Technology (JET) Program*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	6.290	4.027	3.358	-	3.358	3.342	3.412	3.449	3.476	Continuing	Continuing
192: *Joint Electromagnetic Technology (JET) Program*	6.290	4.027	3.358	-	3.358	3.342	3.412	3.449	3.476	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The JET Program supports the Defense Community in general with a particular emphasis on the communication requirements of Special Forces and Intelligence. Details of the program are classified. This program is funded under Budget Activity 4, Demonstration and Validation.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	6.298	4.027	4.103	-	4.103
Current President's Budget	6.290	4.027	3.358	-	3.358
Total Adjustments	-0.008	-	-0.745	-	-0.745
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.008	-	-	-	-
• Studies Contracts Efficiency	-	-	-0.325	-	-0.325
• DoD Service Support Contracts Efficiency	-	-	-0.213	-	-0.213
• Economic Assumptions	-	-	-0.004	-	-0.004
• NII Contractor Efficiency	-	-	-0.203	-	-0.203

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: 192: *Joint Electromagnetic Technology (JET) Program*		
Congressional Add: *Secure Minitaturized, Free Space, Optical Communications*	1.600	-
Congressional Add: *Lifetime Power for Wireless Control Sensors*	0.800	-
Congressional Add Subtotals for Project: 192	2.400	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0303191D8Z: *Joint Electromagnetic Technology (JET) Program*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Congressional Add Totals for all Projects	2.400	-

Change Summary Explanation

FY 2010: Program adjustment -0.008 million.
FY 2011: No change.
FY 2012: OSD Studies Contracts efficiency -0.325 million, DoD Service Support Contracts efficiency -0.213 million, Economic Assumptions -0.004 million, NII Contractor efficiency -0.203 million.

Studies contract Efficiencies will be realized by reducing the number of studies that we participate in while still supporting enterprise-wide information technology goals critical to DoD Mission.
Service Support Contract efficiencies will be realized by reducing the reliance on DoD Service Support Contractors by utilizing in-house government support in a constrained personnel and resource environment.
NII reduction to contractor staff efficiencies will be realized by continuing to provide policy, guidance, program oversight, and resource management for command and control (C2), communications, spectrum, information assurance, and Information Technology programs with significantly less contractor support.
Economic Assumptions will be realized by reducing our reliance on contractors while still achieving OASD(NII)/DoD CIO goals and objectives while in a constrained personnel and resource environment.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: JET Program Initiatives	3.890	4.027	3.358
FY 2010 Accomplishments: Program Planning and Support			
FY 2011 Plans: Program Planning and Support			
FY 2012 Plans: Program Planning and Support			
Accomplishments/Planned Programs Subtotals	3.890	4.027	3.358

	FY 2010	FY 2011
Congressional Add: Secure Minitaturized, Free Space, Optical Communications ***FY 2010 Accomplishments:*** Program Planning and Support	1.600	-
Congressional Add: Lifetime Power for Wireless Control Sensors	0.800	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0303191D8Z: *Joint Electromagnetic Technology (JET) Program*

	FY 2010	FY 2011
FY 2010 Accomplishments: Program and Planning Support		
Congressional Adds Subtotals	2.400	-

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

- Numbers of operational field demonstrations.
- Numbers of false-positive results.
- Successful technology transfer to service component.
- Number of service requirements satisfied.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	36.293	24.344	-	-	-	-	-	-	-	Continuing	Continuing
P051: *Defense Acquisition Challenge Program*	25.970	24.344	-	-	-	-	-	-	-	Continuing	Continuing
P052: *Contingency Acquisition Support Model (cASM)*	10.323	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

Defense Efficiency – Baseline Review. As part of the Secretary of Defense's efficiency reform agenda for the Department, a zero-based review of the organization's programs to align resources to the most critical priorities and eliminate lower priority functions was performed. As part of this initiative, the Defense Acquisition Challenge Program (DACP) will complete FY11 efforts, and will be terminated in FY12.

A. Mission Description and Budget Item Justification

Authorized by Title 10, U.S. Code, Section 2359b, the Defense Acquisition Challenge (DAC) Program increases opportunities to insert innovative and cost-saving technologies into Department of Defense (DoD) acquisition programs. DAC funds the test and evaluation of technologies and products with potential to improve performance, affordability, manufacturability, or operational capability of current acquisition programs at the subcomponent, component, or system level. Reflective of DoD programmatic decisions, the Defense Acquisition Challenge program is terminated in FY 2012.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	28.629	24.344	30.319	-	30.319
Current President's Budget	36.293	24.344	-	-	-
Total Adjustments	7.664	-	-30.319	-	-30.319
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	8.284	-			
• SBIR/STTR Transfer	-0.537	-			
• Other Adjustment	-0.083	-	-	-	-
• Defense Efficiency – Baseline Review	-	-	-30.319	-	-30.319

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Secretary of Defense's efficiency reform agenda for the Department, a zero-based review of the organization's programs to align resources to the most critical priorities and eliminate lower priority functions was performed. As part of this initiative, the Defense Acquisition Challenge Program (DACP) will complete FY11 efforts, and will be terminated in FY12.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P051: *Defense Acquisition Challenge Program*	25.970	24.344	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Authorized by Title 10, U.S. Code, Section 2359b, the Defense Acquisition Challenge (DAC) Program increases opportunities to insert innovative and cost-saving technologies into Department of Defense (DoD) acquisition programs. DAC funds the test and evaluation of technologies and products with potential to improve performance, affordability, manufacturability, or operational capability of current acquisition programs at the subcomponent, component, or system level.

Since the program inception in FY 2003, Office of Secretary of Defense (OSD) has initiated 133 projects; 66 projects have been completed to date; 59 met Service or Agency testing requirements and 36 led to procurements with technology currently in use by our warfighters in Iraq, Afghanistan, or at U.S. training facilities. Given the program tests developed equipment, service and United States Special Operations Command (USSOCOM) program managers report that the average Research, Development, Test and Evaluation (RDT&E) and Operations and Support (O&S) non-recurring cost avoidance is at least 5-to-1.

The DAC program provides the department an efficiency that is not generally recognized. With centralized DAC funding in OSD, funding can be readily moved among the Services and USSOCOM to take advantage of emerging opportunities and fund joint projects.

DAC increases opportunities for domestic vendors to enter the DoD acquisition process. Although business size is not an evaluation criterion, approximately 60 percent of the projects awarded are with technology providers at the small or mid-sized enterprise level. DAC has the additional DoD/National Security benefit of expanding the industrial base for defense acquisition.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Advanced Infrared (IR) Expendable Decoy (Air Force)	2.639	-	-
Description: Evaluate a small kinematic infrared (IR) decoy that protects Air Force and Navy aircraft (C-130H, KC-130J, A-10, and F-16) against current generation IR-guided missiles that reject conventional non-kinematic flares. The primary outputs are the protection of medium-signature aircraft against heat-seeking missiles that employ kinematic techniques. This flare is much more compact than existing designs, enabling more decoys to be carried per mission.			
FY 2010 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
2500 flares tested captive seeker flight qualification for protecting the C-130H, KC-130J, A-10, and F-16 aircraft. IR signatures and trajectories were measured at operational airspeeds and altitudes. All hazard/safety assessment, durability assessment, and functional assessment qualification testing was completed. Preparations for transition into the inventory completed.			
Title: Advanced Radio Frequency Distribution Unit (RFDU) for Improved SIGINT (Navy) - Contingent upon Congressional appropriation and/or Congressional new start authority. ***Description:*** This project will test and evaluate a Signals Intelligence (SIGINT) RFDU for the Navy's CCOP (Cryptologic Carry-on Program) that allows the detection of weak radio frequency signals in the presence of strong shipboard Electromagnetic Interference (EMI). This technology will replace a closed, obsolete product with an improved, modular, cryogenically-cooled system that is easily scalable to meet future mission needs. ***FY 2011 Plans:*** Contract for test articles 2Q FY 2011. Delivery of test articles 3Q FY 2011. Environmental testing and evaluation 3Q – 4Q FY 2011. ***FY 2012 Plans:*** Range testing and shipboard installation and testing 1Q – 2Q FY 2012. Complete technical report, closeout reports and procurement decision 3Q FY 2012.	-	1.530	-
Title: Automated Digital Network System (ADNS) Wide Area Network (WAN) Optimization Challenge (Navy) ***Description:*** Test commercial off the shelf products to upgrade functions in network monitoring, quality of service, and advanced compression for the ADNS. Sailors on Carriers complete IT missions using roughly the same network capacity as a home user (cable modem). This project will allow full realization of current satellite communication capability. ***FY 2010 Accomplishments:*** Developed testing evaluation criteria and received test articles during 3Q FY 2010. Conducted integration and laboratory testing. Preliminary down select completed 4Q FY 2010. ***FY 2011 Plans:*** Continue laboratory testing and evaluations 1Q – 2Q FY 2011. Provide test report 2Q FY 2011. Acceptance Testing 3Q FY 2011. Procurement decision 4Q FY 2011.	1.252	1.170	-
Title: B-2 Stores Management System (SMS) Test Program Initiative (Air Force) ***Description:*** Test an on-aircraft B-2 SMS test diagnostic capability. SMS anomalies involving complex avionics architecture linked through MIL-STD 1760 interfaces can jeopardize a B-2's ability to support its primary mission. On board SMS diagnostics	1.368	2.147	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
will test configured weapon station interface serviceability, assess weapon release equipment integrity and troubleshoot end-to-end weapon stores functions. ***FY 2010 Accomplishments:*** Established initial Test Package Set technical performance requirements, involving one of two supported munitions release equipment items, and completed all required contracting actions through three separate awards. ***FY 2011 Plans:*** Establish and demonstrate a test set package, Smart Bomb Rack Assembly, including all interface hardware and associated level-3 drawings for follow-on local manufacture. ***FY 2012 Plans:*** Closeout report and procurement decision by 4Q FY 2012.			
Title: Biological Aerosol Confidence Check Device (Army) ***Description:*** Test a ruggedized Bio Aerosol Confidence Check Device that will increase operator's confidence that a biological aerosol detection system is working properly. Joint Services will utilize this common device to standardize test methodology, training, and provide confidence to the warfighter. ***FY 2010 Accomplishments:*** Contract awarded in 4Q FY 2010. Government testing with device evaluated in fielding plan for Joint Biological Point Detection System. ***FY 2011 Plans:*** Complete testing evaluation and user assessment. Procurement decision 4Q FY 2011.	0.728	0.411	-
Title: Composite Segmented Reflector Antenna for Satellite Communication Systems (Air Force) ***Description:*** Test a light-weight, compact, durable, segmented composite antenna reflector for use in small aperture man-pack satellite communications and other systems, in the X, Ka, and Ku frequency bands. The primary outputs are weight reduction, size reduction, and increased transport advantages over the currently available metallic and coated composite antenna reflectors. ***FY 2010 Accomplishments:***	0.547	0.430	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Test and production contracts awarded. Parabolic geometry/design specification for X, Ku and Ka band composite reflector established. Mechanical design of interchangeable X, Ku, and Ka band reflectors completed. First reflector prototypes delivered with 50+ units integrated and deployed to Afghanistan through JSOC-J6 and USSOCOM for operational testing. ***FY 2011 Plans:*** Conduct structural, environmental, and operational field testing of Ku,Ka-band 60cm reflector. Conduct field testing Ku, Ka dishes (USSOCOM). Construct and test revised petal latching mechanism for new extreme wind load requirements. Continue procurement x-band assets for integration and field deployment (USSOCOM). Achieved procurement decision. Fabricate and demonstrate Ku/Ka-band 60cm aperture segmented reflectors.			
Title: Conformal Warfighter Wearable Battery Power Source (CWS) (Army) ***Description:*** Test a wearable power source for the Soldier that can be worn in the Improved Outer Tactical Vest or as an attachment, providing flexibility for use as a wearable battery pack power source which is bullet safe with improved high temperature performance. This Lithium-ion polymer battery uses phase change material that removes heat from the battery pack. ***FY 2010 Accomplishments:*** Placed on Joint contract with the United States Air Force Research Lab contracting and technical team and the US Army Project Manager Soldier Warrior team. ***FY 2011 Plans:*** Procure additional test batteries and perform logistics tests and engineering evaluation. Testing will include International Air Transport Association (IATA) certification, Safety Assessments, and Factory Acceptance Testing. Procure upon successful completion of testing.	1.259	0.491	-
Title: Dynamic Modems (Navy) - Contingent upon Congressional appropriation and/or Congressional new start authority. ***Description:*** This project will test commercial off the shelf modem products to address a challenge currently facing the Navy Multiband Terminal (NMT) program. Dynamic modems provides a bandwidth sharing capability, drastically increasing throughput and would replace the Frequency Division Multiple Access wideband modems currently planned for deployment. ***FY 2011 Plans:*** Contract for test articles 2Q FY 2011. Conduct baseline testing during 3Q – 4Q FY 2011. ***FY 2012 Plans:***	-	1.717	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Conduct Dynamic Digital Video Broadcast – Satellite Generation 2 (DVB-S2) Testing during 1Q – 2Q FY 2012. Prepare decision packet and final test report 3Q FY 2012. Closeout report and procurement decision by 4Q FY 2012.			
Title: Expeditionary Water Packaging System (EWPS) (Navy) ***Description:*** Test a water packaging solution that will alleviate safety hazards and logistics burdens associated with the distribution of unregulated bottled water to deployed forces. The EWPS will provide a portable water packaging system for all phases of the Marine Expeditionary Unit, Marine Expeditionary Battalion, and Marine Expeditionary Force deployments. The primary outputs are provide the capability to package and distribute potable water for less than $1.00 per liter, increase warfighter survivability by eliminating the threat of contamination to unregulated packaged water through sabotage or indirect means, and increase operational flexibility of Marine forces deployed in expeditionary environments. ***FY 2010 Accomplishments:*** Completed Source Selection during early 3Q FY 2010. Contract awarded at the end of 3Q FY 2010. Completed fabrication of test articles during 4Q FY 2010. ***FY 2011 Plans:*** Receive test articles during 1Q FY 2011. Initiate Qualification testing during 1Q FY 2011 and complete during 2Q FY 2011. Initiate Field User Evaluation during 2Q FY 2011 and complete during 3Q FY 2011. Finalize technical test report, closeout report, and procurement decision by the end of 4Q FY 2011.	1.189	-	-
Title: Fully Integrated Fire Control Solution for Machine Guns (Special Operations Command) ***Description:*** Competitively evaluate a fully-integrated modular fire control solutions for crew served weapons, comprised of a family of machine gun day optics, thermal, and night vision systems. The primary efficiency is a night vision augmentation system that will provide the Special Operations Forces warfighter with sighting and target acquisition capability in smoke, adverse weather, and extreme low light and improved detection capability for buried items such as weapons caches and improved explosive devices. ***FY 2010 Accomplishments:*** Obtained vendor test samples, and conducted technical evaluation. Conducted down select evaluation of available data. Awarded contract for low rate initial production (LRIP) test articles. ***FY 2011 Plans:***	1.040	2.571	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Receive test articles. Conduct operational testing, and obtained safety confirmation/Laser Safety Review Board approval. Enter Phase Two Integration with design of control module, and M2 Rail Interface System. Procure modified test items for integration test and evaluation. ***FY 2012 Plans:*** Conduct integration test and prepare test reports. Obtain milestone decision and fielding and deployment release. Submit closeout report.			
Title: Handheld Total Fluid Condition Monitor (Special Operations Command) ***Description:*** Test an affordable, easy to use, handheld monitor that provides real-time, on-demand, point-of-use, fluid condition assessment for hydraulic and lubrication oils. The primary outputs are a FluidScan system usable by the average soldier to obtain on-the-spot fluid condition assessment in less than two minutes, a system that meets environmental compliance, and complies with Army standards for oil analysis. ***FY 2010 Accomplishments:*** Received test articles. Conducted analysis, study, and analysis of vendor's test data. Initiated 60-day developmental/technical and initial user testing. Completed Technical Test Report. ***FY 2011 Plans:*** Complete analysis of vendor data. Take delivery of Aircraft Version test articles, and complete operational and developmental testing. Finalize test reports. Prepare documentation and obtain milestone decision. Submit project closeout report.	0.504	-	-
Title: Herculite XP Glass for Bombing Hazard Reduction (Air Force) - Contingent upon Congressional appropriation and/or Congressional New Start Authority ***Description:*** Test a new high strength tempered glass which will provide blast and impact protection far superior to traditional annealed or fully tempered glass. Provides higher levels of protection, with less glass weight and less cost, for DoD barracks, medical facilities and other primary gathering facilities in Afghanistan and Iraq and at other military installations worldwide. ***FY 2010 Accomplishments:*** Established initial Test Plan and technical performance requirements in preparation for FY11 performance testing. ***FY 2011 Plans:*** Complete level of protection testing. Test results will lead to qualified window designs and specifications for punched and storefront applications of Herculite XP glass.	-	0.983	-
Title: High Mobility Multipurpose Wheeled Vehicle (HMMWV) Suspension Upgrades (HSU) (Out-of-Cycle) (Navy)	2.060	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Competitively test multiple HMMWV Suspension Upgrade (HSU) technologies to increase crew safety, mobility and overall performance to deliver a suspension that restores designed performance specifications (payload capacity, ride height and increased stability). The primary outputs are improved survivability and lethality of the HMMWV and improved mission capability due to increased payload, off-road performance, and reliability. ***FY 2010 Accomplishments:*** Request for Proposal (RFP) package released and responses received end of 3Q FY 2010. Completed Baseline Testing beginning of 4Q FY 2010. Test article contract awarded at the end of 4Q FY 2010. Initiated fabrication of Test Articles at the end of 4Q FY 2010. ***FY 2011 Plans:*** Complete fabrication and delivery of test articles during 1Q FY 2011. Initiate Performance Testing at the beginning of 2Q FY 2011 and complete testing by the end of 2Q FY 2011. Finalize technical test report, closeout report, and procurement decision by the end of 3Q FY 2011.			
Title: High Energy Density Rechargeable Battery (Army) - Contingent upon Congressional appropriation and/or Congressional new start authority. ***Description:*** Test and certify a 300Whs BB2590 battery. Using the advanced high energy density cathode, anode and electrolyte developed in house, this technology offers 50 percent more energy than the currently fielded BB2590. Embedded advanced control electronics will provide high power capability and dynamic cell balancing. Advantages are weight reduction, increased battery life, increased system survivability, and increased mobility. ***FY 2011 Plans:*** Technical testing 2Q FY 2011. Field testing 3Q – 4Q FY 2011. ***FY 2012 Plans:*** Purchase additional test assets and undergo Logistics Tests and engineering evaluation 1Q – 3Q FY 2012. In 4Q FY 2012, there will be an evaluation of overall performance, with procurement decision and closeout report.	-	0.990	-
Title: Hostile Fire Aid for the AN/AVR-2B Laser Detecting Set (Special Operations Command) ***Description:*** Test and integrate a new software Operational Flight Program (OFP) for the AN/AVR-2B laser detecting set (LDS) currently fielded on Army rotary wing aircraft. The new software OFP will provide for detection of hostile small arms and rocket propelled grenades (RPG) fire events, and alert the aircrew via existing on-board equipment. The primary output efficiency is the new software OFP that utilizes the laser beam rider detection channel to alert the aircrew of small arms, crew served weapons, and rocket propelled grenade fire. Live-fire test of the new software algorithms to detect hostile fire threats will be accomplished.	0.748	0.627	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Conducted software integration and bench testing. Conducted ground developmental testing and collected aircraft noise data. ***FY 2011 Plans:*** Complete data analysis and reporting. Complete software updates and algorithms/integration testing. Conduct live fire flight for technical/operational testing. Conduct data analysis and reporting. Complete functional qualification testing and prepare test reports. Compile documentation for production milestone decision. Submit closeout report 4Q FY 2011.			
Title: Improved Flash Hider For M2 Heavy Barrel (M2HB) .50 Cal Weapons (Special Operations Command) ***Description:*** Evaluate an improved flash hider for .50 caliber machine guns. The flash hider will reduce an enemies' ability to detect the weapon and prevent operator's loss of night vision capability caused by the muzzle flash. The primary outputs and efficiencies are system architecture with no tools required for attachment or removal, weight and size reductions that respond to Special Operations Forces requests, and capable of withstanding 25,000 rounds without system degradation. ***FY 2010 Accomplishments:*** Developed and published performance specifications and solicited industry for test samples. Updated Source Selection Plan and the Single Acquisition Management Plan. Obtained Safety Release to support initial user assessment for technical testing. Completed source selection and subsequent contracting action for test articles. Initiated final user assessment for Operational Test and Evaluation. ***FY 2011 Plans:*** Complete operational/user assessment test and complete test reports. Obtain production decision, fielding and deployment release. Complete project closeout report 3Q FY 2011.	0.438	-	-
Title: Improved Viper Strike Precision Guided Munitions (Special Operations Command) ***Description:*** Evaluate subsystems that reduce the cost and procurement lead times of an Alternate Semi-Active Laser (ASAL), while maintaining or improving operational attack capability of the Viper Strike munitions. The primary outputs and efficiencies are to demonstrate ASAL form, fit and function replacement to existing seeker and validate equal or greater ASAL operational capability. ***FY 2010 Accomplishments:*** Completed ASAL engineering and software development as well as laboratory simulation and testing. Initiated integration of testing with battle management system. Received initial ASAL Flight Test Articles. Conducted operator/user assessment testing and prepared test report. Fielded initial ASAL variant to Overseas Contingency Operational area. ***FY 2011 Plans:***	0.355	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Finalize integration of testing with battle management system. Receive follow-on ASAL Flight Test Articles and conduct end-to-end system live fire testing at China Lake Test Range, CA. Complete documentation for production decision. Submit project closeout report 2Q FY 2011. Field ASAL capability.			
Title: Intelligent Power Management and Distribution System (IPMDS) (Army) ***Description:*** Test a 100 amp power management and distribution system to meet US Army electrical and environmental requirements for Tactical Operations Centers. Goals are reduce setup time of mobile power grids, allow for a more reliable and robust power grid setup, increase soldier safety around electrical power equipment, and allow for more efficient fuel consumption of generators. The primary outputs are automatic electrical load balancing across the three phases of the generator set and increased safety with indication of improper grounding and improper setup. ***FY 2010 Accomplishments:*** Test Article delivered in 3Q FY 2010. Initial electrical and safety tested from 3Q FY 2010 to 1Q FY 2011 at Fort Belvoir, Virginia. Environmental and Electro-magnetic Interference tested from 3Q FY 2010 to 1Q FY 2011 at Aberdeen Test Center, Aberdeen MD. ***FY 2011 Plans:*** Operational testing will be conducted and completed during the 2Q FY 2011. Technical test report developed during the 2Q FY 2011. Limited procurement in 3Q FY 2011.	0.717	-	-
Title: JP-8 Operated Modified Commercial Generator (Army) ***Description:*** Test JP-8 operated modified commercial generator sets rated at one kilowatt to determine if they can meet US Army electrical and environmental requirements. If successful, potential benefits include reduced fuel consumption, reduced weight burden on the Warfighter, and added capability via forward use of power sources. The primary outputs are fielding of the first Soldier-portable, logistic fueled, one kilowatt power source for tactical operations. ***FY 2010 Accomplishments:*** Received and evaluated proposals. Awarded contract to Sonnex Research. Completed baseline engine/generator evaluation to determine the extent of modification required in order to meet performance and safety requirements. ***FY 2011 Plans:*** Test article delivery expected end of 1Q FY 2011. Government testing and safety release expected to be complete 2Q FY 2011. Procurement decision will be made by 4Q FY 2011 based upon successful user evaluation.	0.425	0.082	-
Title: Large Aircraft, Low-Cost, Lightweight, Laser Turret Assembly Spiral (LAIRCM) (Air Force)	0.766	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Test suitability of the AIM-9 based Quiet Eyes turret coupled with a commercial off-the-shelf Quantum Cascading Laser (QCL) for use in large aircraft systems and to field as a compatible "suitable substitute" for the existing LAIRCM turret. The primary outputs are the validation of the laser turret assembly to protect large aircraft as a form/fit/function-suitable substitute for the existing large aircraft infra-red countermeasure turret assembly. ***FY 2010 Accomplishments:*** Contracted for and procure test articles. Integrated laser with turret. Conducted initial technical testing. Conducted initial Government-sanctioned technical testing. Prepared decision package for production program. ***FY 2011 Plans:*** Integrate laser with turret. Conduct Contractor integration and performance testing. Conduct Government performance testing to validate suitability. Prepare decision package for implementation and production program.			
Title: Lightweight, Reliable, Increased Capacity Magazine for Special Operations Forces Combat Assault Rifle (Special Operations Command) ***Description:*** Test advanced, more reliable, lightweight polymer or heat-treated hard anodized magazines for the Special Operations Forces Combat Assault Rifle (SCAR) MK 16 (light), and MK 17 (heavy). The candidate magazines will provide an advanced magazine design that is injection molded of state-of-the-art plastic resin or heat-treated hard anodize metal, and once inserted in the weapon, prevents outside contaminants from entering from either the magazine itself or the magazine well. The primary outputs and efficiencies will be new magazines that provide additional ammunition capacity for MK 16 and MK 17, are unaffected by rust or corrosion, and can easily be cleaned in the field. ***FY 2010 Accomplishments:*** Prepared and issued solicitation and obtained test article samples. Performed technical, go/no-go testing in support of source selection. ***FY 2011 Plans:*** Perform technical, go/no-go testing in support of source selection. Receive test articles and conduct Low Rate Initial Production of magazines to complete first article testing. Obtain procurement decision and prepare delivery order for production. Submit closeout report 4Q FY 2011.	0.367	0.793	-
Title: Lightweight Surveillance and Battle Damage Assessment Device (LW-SBDAD) (Army) - Contingent upon Congressional appropriation and/or Congressional new start authority.	-	0.564	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Test a lighter, smaller and cheaper alternative to the current binocular. The current M25 Stabilized Binocular is 4.5 lbs in weight and has bulky dimensions, which make it non user friendly. If successful, this DAC project will reduce the size and weight by 40 percent and provide a cost savings of 40-60 percent per unit. ***FY 2011 Plans:*** Laboratory and operational testing will be performed at Aberdeen Proving Grounds (APG), MD. Laboratory testing will include Collimation, Resolution, Laser Eye Protection, Focus, and Image Tilt/Parallax tests. APG tests will include evaluation of environmental effects (temperature, shock, drop, humidity, salt, fog, etc.) and Man Power and Personal Integration Evaluations in various combat scenarios with and without protective clothing. Procurement decision 4Q FY 2011 -1Q FY 2012. Submit closeout report 1Q FY 2011.			
Title: Low Cost SQS-53 Improved Sonar Acoustic Window (ISAW) (Navy) ***Description:*** Install and test at sea an improved sonar acoustic window for the AN/SQS-53 sonar. This window will be constructed of a new composite material optimized to meet both structural and acoustic requirements. Benefits to be demonstrated are reduced lifecycle costs, longer service life, simplified maintenance and improved safety for maintenance personnel due to the elimination of the requirement for hyperbaric entry, and reduced environmental impact by introduction of a new marine anti-fouling compound in the design of the window. ***FY 2010 Accomplishments:*** Conducted acoustic and structural testing of ISAW components and test coupons during 3Q FY 2010. Completed design review and began build of the test article in 3Q FY 2010. Constructed test stand for land based testing 3Q FY 2010. Developed shipyard installation work package in 4Q FY 2010. Developed statement of work during 4Q FY 2010 for installation of test article on board the test ship. ***FY 2011 Plans:*** Install test articles 1Q FY 2011. Complete phase two of the sonar electronics groom, including light off, calibration and alignment, and layup of the sonar system during 2Q FY 2011. Complete sea test planning for FY 2012 ship board testing in 4Q FY 2011. ***FY 2012 Plans:*** Install new sonar cables, transducers, and ISAW during the ship yard availability in 1Q FY 2012, followed by at sea testing of test articles and project closeout during 2Q FY 2012.	1.117	1.807	-
Title: M1A1 Sniper Detection System (SDS) (Navy)	0.097	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Test a Sniper Detection System that near instantaneously detects and accurately locates an enemy sniper when a round has been fired, improving the safety of tank crews and dismounted infantry. The primary outputs are improved survivability and lethality of the M1A1 Tank, and increasing survivability and situational awareness of dismounted infantry. ***FY 2010 Accomplishments:*** Received test articles and completed M1A1 integration and user interface/lab testing at the end of 2Q FY 2010. Tactical testing completed during 3Q FY 2010. Operational testing completed at the end of 3Q FY 2010. Testing revealed the M1A1 is too noisy an environment for an acoustic system; therefore the effort was terminated. Finalized technical test report during 4Q FY 2010. ***FY 2011 Plans:*** Finalize closeout report during 1Q FY 2011.			
Title: Modular Ghillie Suit and Ghillie Suit Accessory Kit (Army) - Contingent upon Congressional appropriation and/or Congressional new start authority. ***Description:*** The Modular Ghillie Suit (MGSAK) and Ghillie Suit Accessory Kit (GSAK) upgrade provides surveillance units and snipers with a Flame Resistant Base Layer and various camouflage multi-functional materials to construct, repair, and modify GSAKs to meet unique mission and climatic requirements. It also provides multi-protective combat camouflage capabilities. ***FY 2011 Plans:*** Perform testing to verify the systems meet the performance parameters and criteria of the basic Fire Resistance and durability. Operational Testing to validate whether the MGSAK and GSAK will meet or exceed the durability and reliability requirements of the GSAK and Core Soldier System requirements. Procurement decision 4Q FY 2011.	-	0.534	-
Title: Next Generation Night Vision Imaging Technology (Special Operations Command) ***Description:*** Test low-light camera technology for applications in next generation Special Operations Forces Ground Mobility Visual Augmentation Systems in place of Image Intensification Tube technology. These image fusion components will be integrated into handheld, head worn, and weapon-mounted night-vision systems. The primary efficiencies are to demonstrate improvement in resolution from the current state of 40 line pairs/ millimeter (lp/mm) to a minimum of 50 lp/mm, reduce power consumption from three watts to 1.5 watts or less, increase the detection and identification ranges, and provide better combat security. ***FY 2010 Accomplishments:***	0.411	0.295	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Procured/contracted for test articles. Conducted Preliminary Design Review of integrated Electron Bombarded Active Pixel Sensor (EBAPS) into the Recon III handheld night vision goggles. ***FY 2011 Plans:*** Conduct Critical Design Review. Receive integrated EBAPS/Recon III night vision goggle test articles and conduct initial vendor technical testing. Analyze vendor test data. ***FY 2012 Plans:*** Conduct combined developmental and operational testing. Prepare testing and documentation for production decision. Complete project closeout report 1Q FY 2012.			
Title: Package on Package Technology for ARC-210 Radio (Navy) ***Description:*** Test Package on Package (POP) technology which is three dimensional stacking of two or more Ball Grid Array (BGA) microelectronic packages that enables increased capabilities and functionalities in limited space. This enables significant capability and functionality growth in the ARC-210 Tactical radio, allows platforms to receive capabilities upgrades quicker and at less cost, and allows the weapons platforms to be returned to service quicker. The primary outputs are increased interoperability and mission flexibility. ***FY 2010 Accomplishments:*** Initiated contract preparation during 1Q-2Q FY 2010. Test article contract awarded 3Q FY 2010. Delivered Initial Program Plan and Schedule 4Q FY 2010. Test board design complete and build process initiated 4Q FY 2010. ***FY 2011 Plans:*** Commence development testing by 2Q FY 2011. Complete Reliability Testing 4Q FY 2011. ***FY 2012 Plans:*** Insert technology into production article 1Q FY 2012.	0.599	0.300	-
Title: Personal Aircrew Cooling for Enhanced Endurance (PACE2) Program (Navy) ***Description:*** Test a personal, portable cooling unit to meet an Urgent Universal Needs Statement (UUNS) issued by U.S. Marine Corps Forces Command. The primary outputs are provides an effective man-mounted personal portable cooling unit that will improve health readiness, mitigate heat stress injuries and reduce dehydration. ***FY 2010 Accomplishments:***	0.423	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Initiated contract preparation during 4Q FY 2009/1Q FY 2010. Awarded contract for procurement of test articles 2Q FY2010. Test articles delivered 4Q FY 2010. Examined human factors and integration factors 4Q FY 2010. Developed performance specification for system 4Q FY 2010. ***FY 2011 Plans:*** Complete Operational Evaluation 1Q FY 2011. Conduct crashworthy testing 2Q FY 2011. Conduct underwater egress evaluation 3Q FY 2011. Conduct Operational Evaluation 3Q FY 2011. Finalize technical test report, and initiate procurement decision 4Q FY 2011.			
Title: Personnel Transport Module (PTM) for Landing Craft Air Cushion (Navy) ***Description:*** Test a personnel transport module (PTM) for use aboard the Landing Craft Air Cushion (LCAC). The PTM, constructed of a light weight yet durable composite material, will enable the Navy to deploy up to 180 seated combat-ready Marines or 54 litter-borne medical evacuees in a single LCAC sortie. The primary outputs are resolution of the severe deficiencies of the current design, including reduced assembly time and improved ventilation to increase habitability and usage, and delivery of a PTM that provides increased durability and reduced corrosion for improved maintenance and life cycle costs. ***FY 2010 Accomplishments:*** Completed contract award 3Q FY 2010. Prepared test plan 4Q FY 2010. Completed test and evaluation of use of a portable generator environmental trailer with PTM and preliminary fire qualification testing 4Q FY 2010. Acquisition strategy drafted and signed by the NSWC PC contracts office 4Q FY 2010. ***FY 2011 Plans:*** Receive test articles 2Q FY 2011. Complete fire qualification testing and perform follow-up testing by 2Q FY 2011. Complete operational tests 4Q FY 2011. Procurement decision 4Q FY 2011.	0.916	1.030	-
Title: Pyrophoric Decoy Second Source (Navy) - Contingent upon Congressional appropriation and/or Congressional new start authority. ***Description:*** Test to qualify a second source for MJU-49/B and MJU-64/B pyrophoric decoys. Currently one source for the flare material exists; this effort will establish and qualify a second source to manufacture these items. The primary outputs are a second source for MJU-64/B and the MJU-49/B pyrophoric decoys for the US Navy and other Services, decreased unit costs, and ensure a steady supply of decoys in the event of a production disruption or increased demand. ***FY 2011 Plans:***	-	1.006	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Contract for developmental test articles 2Q FY 2011. Function evaluation of 3 groups of developmental test articles 3Q and 4Q FY 2011. Preliminary design review 3Q FY 2011. Flight function test 4Q FY 2011. ***FY 2012 Plans:*** Development tests scheduled for 2Q FY 2012. Qualification tests planned for 3Q FY 2012. Initiate procurement decision 4Q FY 2012.			
Title: Sensor Fusion Clip-On Night Vision Device for SOF Combat Assault Rifle (Special Operations Command) ***Description:*** Test and evaluate a Sensor Fusion Clip-on Night Vision Device for the Special Operations Forces (SOF) Combat Assault Rifle that integrates the technologies of both thermal and image intensification into one sight. This provides the SOF warfighter a greater advantage when operating in austere environments. The primary efficiency is to demonstrate significant improvement in target acquisition in rain, mist, smoke, vegetation, fog, dust, and low light. ***FY 2010 Accomplishments:*** Conducted technical evaluation and user operational assessment. Finalized technical and operational test reports. Obtained Low Rate Initial Production (LRIP) decision and completed LRIP procurement contract for first article test items. ***FY 2011 Plans:*** Receive delivery of LRIP units, conduct first article testing, and obtain final safety confirmation. Obtain production decision and fielding and deployment release. Project closeout is scheduled 4Q FY 2011.	0.498	-	-
Title: Shipboard Antenna Radar Replacement (Navy) - Contingent upon Congressional appropriation and/or Congressional new start authority. ***Description:*** This project will test a shipboard antenna to provide improved performance for high frequency (HF) direction finding (DF) antennas (improved threat detection), while reducing Radar Cross Section (RCS) and Operating and Support (O&S) costs, for use by the U.S. Navy. This antenna would replace the current AS-3202 (1960's technology) antennas which are a part of the suite of antennas for the Ship's Signal Exploitation Equipment (SSEE) program of record. ***FY 2011 Plans:*** Contract for test articles 2Q FY 2011. Acceptance test and documentation 4Q FY 2011. Conduct environmental qualification testing 4Q FY 2011. ***FY 2012 Plans:***	-	1.227	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Shipboard planning and installation during 1Q – 2Q FY 2012. Shipboard testing planned for 3Q FY 2012. Procurement decision and closeout report scheduled for 4Q FY 2012.			
Title: Shock Profile of SOF Combat Assault Rifle (Special Operations Command) ***Description:*** Test upgrades to shock profile equipment for Special Operations Combat (SOCOM) Assault Rifle (SCAR) weapons which have exhibited shock values higher than currently fielded Miniature Day Night Sights (MDNS) are designed to withstand. The primary outputs include upgraded shock profile software to replicate SCAR performance; cost effective tests of MDNS accessories to determine shock dampening requirements; and final validation of dampened MDNS accessories. This project expedites MDNS equipment adjustment to the SCAR, will save millions in replacement equipment for SCAR and expedites the fielding of MDNS. ***FY 2010 Accomplishments:*** Completed upgrade of SCAR shock profiler. Completed contract action and received shock mitigation test articles and SCAR aftermarket solution samples. Conducted technical testing of MNDS accessories and dampening measures and prepared technical test report. ***FY 2011 Plans:*** Prepare production decision package. Project closeout is scheduled 1Q FY 2011.	0.520	-	-
Title: Shockwave Therapy for Traumatic Wounds and Burns of the Extremity (Army) ***Description:*** Courier NewTest upgrades to shock profile equipment for Special Operations Combat Assault Rifle (SCAR) weapons which have exhibited shock values higher than currently fielded Miniature Day Night Sights (MDNS) are designed to withstand. The primary outputs include upgraded shock profile software to replicate SCAR performance; cost effective tests of MDNS accessories to determine shock dampening requirements; and final validation of dampened MDNS accessories. This project expedites MDNS equipment adjustment to the SCAR, will save millions in replacement equipment for SCAR and expedites the fielding of MDNS. ***FY 2010 Accomplishments:*** Test articles delivered to Walter Reed Army Medical Center (WRAMC), Brooke Army Medical Center, University of Alabama Medical Center at Birmingham, and Johns Hopkins University Would Center. Twenty nine patients have been enrolled in the study at WRAMC. Interim data analysis conducted during the 4Q FY 2010. ***FY 2011 Plans:*** Prepare production decision package. Project closeout is scheduled 1Q FY 2011.	0.821	-	-
Title: Sinuous Spiral Antenna (SSA) for ANA/ALQ211 (SIRFC) EW System (Special Operations Command)	0.788	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Test a detection antenna for the ALQ-211 Suite of Integrated Radio Frequency Countermeasures (SIRFC) currently fielded on the MH-47G and CV-22. The primary output/efficiency is a new antenna that provides polarization sensitivity allowing SIRFC to better correlate the received signal with its order of battle database, which leads to quicker identification and jamming. Simulation and lab testing will be performed to validate that sinuous antenna face conforms to spiral antenna located within the AN/ALQ-211 Quadrature Antenna Assembly. ***FY 2010 Accomplishments:*** Completed Feasibility Study. Conducted go/no-go decision. Initiated bread boarding and conducted validation testing and completed test reports. ***FY 2011 Plans:*** Project closeout is scheduled 2Q FY 2011.			
Title: Soldier Power Manager (SPM)(Army) - Contingent upon Congressional appropriation and/or Congressional new start authority. ***Description:*** Test a soldier power managers (SPM) which is a small “Power Universalizers” that allow, soldiers to charge any military rechargeable battery from a variety of sources, and then power his entire kit from that single battery, drastically reducing the number and variety of primary batteries needed. This project provides significant field testing of the SPMs, already in lab and limited field trials. ***FY 2011 Plans:*** Perform testing and evaluation on the SPM including environmental, temperature extremes, vibration, drop, rain, and dust & sand tests. Critical Design Review 2Q FY 2011. Operational Testing 3Q FY 2011. Procurement decision 4Q FY 2011.	-	0.780	-
Title: Special Operations Forces (SOF) Forward Trauma Management Set (Special Operations Command) ***Description:*** Evaluate a deployable surgical care and trauma life support systems that will stabilize and sustain casualties with life saving trauma care for SOF operating in remote areas where casualty evacuation is not available. User assessment testing will be completed in three worldwide operational areas: Central Command, Africa Command, and Pacific Command. The primary outputs and efficiencies are resuscitative surgical care and trauma life support equal to tactical combat casualty care guidelines, and within the capability of assigned SOF medical and non-medical personnel, a self contained system set rapidly deployable by C-130/C-17 aircraft, and a modular system sustainable in remote harsh environments. ***FY 2010 Accomplishments:*** Received test articles. Requested Food and Drug Administration approval on five items that were slightly modified for use with SOFTMS. Evaluated form, fit and function, and conducted initial user evaluations. Completed integration and kitting of SOFTMS	0.456	0.565	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
medical and non-medical equipment at Natick Soldier System Center and finalized plans with US Army Aeromedical Research Laboratory to certify air-worthiness of the SOFTMS. ***FY 2011 Plans:*** Prepare technical test report. Perform operator user assessment test, prepare test report on user evaluation. Conduct user assessment/validation (exercise) and prepare validation report. Process documentation for production decision. Project closeout is scheduled 4Q FY 2011.			
Title: Tactical Beyond-Line-of-Sight Communications Extension System (TEBLOS) (Special Operations Command) ***Description:*** Evaluate a tactical, man-portable, beyond line-of-sight (BLOS) troposcatter terminal that significantly increases the existing range of the tactical network data throughput for 16 Megabites per second (Mbps) links from 22 Kilometers (KM) line of sight to 44 KM, while reducing or eliminating vulnerable relay sites. Tactical network range extension currently relies on limited data transfers through expensive Ku-band and Ka-band satellite communications (SATCOM) for BLOS connectivity. The primary outputs and efficiencies are data throughput of 10 Mbps or greater at 40 KM, two person transportable (86 pounds) system, capable of set up and operation in 30 minutes. ***FY 2010 Accomplishments:*** Contract awarded for test articles 3Q FY 2010. Obtained safety release to conduct technical testing. Gained Joint Interoperability Test Command certification and initiated frequency allocation time for initial TEBLOS system testing. ***FY 2011 Plans:*** Allocate frequency time to conduct technical and user assessment/operational testing. Complete all test reporting. Obtain system safety certification and prepare documentation for production decision. Submit project closeout report. Project closeout is scheduled 3Q FY 2011.	2.156	-	-
Title: Tactical Vehicle Battery – Replacement (TVB-R) (Navy) ***Description:*** Test a battery replacement that has a higher energy density, comparable power capability, and greater deep-discharge cycle life compared to the current lead acid battery. The primary outputs are drop in replacement for lead acid batteries, and increase energy density ranging from three to five times over lead acid. ***FY 2010 Accomplishments:*** Contract awarded at the end of 4Q FY 2010. ***FY 2011 Plans:***	0.766	0.614	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Receive Phase I test articles and initiate Comparative testing at the end of 2Q FY 2011. Complete Comparative testing during 3Q FY 2011. Down select during 3Q FY 2011. Receive additional test articles and initiate Performance testing at the end of 4Q FY 2011. ***FY 2012 Plans:*** Complete Performance testing and initiate Field User Evaluation during 1Q FY 2012. Complete all test events during 2Q FY 2012. Finalize technical test report, closeout report, and procurement decision by the end of 3Q FY 2012.			
Title: Thermal Fire Control for the Multi-role Anti-armor Anti-personnel Weapon System (MAAWS) (Special Operations Command) - Contingent upon Congressional appropriationand/or new start authority. ***Description:*** Test upgraded software for the AN/PAS13 Thermal Weapons Sight (TWS) to provide effective targeting acquisition for all 84mm ammunition used in MAAWS. The AN/PAS13 is a fielded lightweight, compact, fire control unit for crew served weapons with 3X electronic zoom, containing programmable reticles and thermal imaging technology. When upgraded with the TWS MAAWS the Special Operations warfighter will have increased lethality on the battlefield. The primary outputs and efficiencies are quick target engagement with target acquisition at one meter increments, high accuracy and increased warfighter security. ***FY 2011 Plans:*** Initiate contract for test articles and conduct vendor software qualification testing. ***FY 2012 Plans:*** Obtain safety verification certification. Conduct developmental and operational testing, and perform operational assessment review. Prepare milestone decision packet. Submit project closeout report 3Q FY 2012.	-	0.758	-
Title: Worldwide Ruggedized Power Supply (WRPS) (Navy) - Contingent upon Congressional appropriation and/or Congressional new start authority. ***Description:*** Test multiple power supplies that will provide the capability to convert 110/220 Volt Alternating Current (VAC) and 50/60 Hertz (Hz) to Direct Current (DC) power. This enables the operation and repair of communications, electronics, medical equipment and weapon systems from ANY power grid, ANYWHERE in the world. The primary outputs are a power supply that is ruggedized, can convert from VAC and Hz to DC power, and provide output currents of 0 to 60 amps while weighing less than 50 pounds. ***FY 2011 Plans:***	-	0.922	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P051: *Defense Acquisition Challenge Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Award a contract during 3Q FY 2011. Initiate and complete fabrication of test articles during 4Q FY 2011. Receive test articles by the end of 4Q FY 2011. ***FY 2012 Plans:*** Initiate Performance testing during 1Q FY 2012 and complete during 2Q FY 2012. Initiate Field User Evaluation during 2Q FY 2012 and complete during 3Q FY 2012. Finalize technical test report, closeout report, and procurement decision by the end of 3Q FY 2012.			
Accomplishments/Planned Programs Subtotals	25.970	24.344	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The Acquisition Strategy for Defense Acquisition Challenge (DAC) Program is as outlined in Title 10. DAC provides opportunities for the increased introduction of innovative and cost-saving technology in acquisition programs of the DoD. DAC funding is used to fund testing of commercial and non-developmental items that could result in improvements in performance, affordability, manufacturability, or operational capability of an existing acquisition program. It is expected that, should testing be successful, the cognizant acquisition program of record will procure.

E. Performance Metrics

From program inception in 2003 until 2010, the Office of Secretary of Defense has initiated 133 projects; 66 projects have been completed to date; 59 met Service or Agency testing requirements and 36 led to procurements witth technology currently in use by our warfighters in Iraq, Afghanistan, or at U.S. training facilities. In FY 2010 DAC had a transition rate of 81 percent for completed projects, exceeding the objective of 30 percent for demonstration programs (Strategic Objective 4-3, Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD (AT&L)). In FY 2010, 60 percent of the projects were awarded to small or mid-sized businesses and 50 percent were awarded to companies indicating "first-time" participation with the Department of Defense.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604051D8Z: *Defense Acquisition Challenge (DAC) Program*	PROJECT P052: *Contingency Acquisition Support Model (cASM)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P052: *Contingency Acquisition Support Model (cASM)*	10.323	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Ebusiness capabilities critical to meet the enterprise-wide needs of the procurement community by including contingency capabilities for 3 in 1 and Contingency Acquisition Support Model.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Contingency Acquisition Support Model (cASM)	10.323	-	-
Description: The Contingency Acquisition Support Model (cASM) project will develop a software application which addresses the ability to electronically generate requirements documents. The primary outputs are enable data entry to populate multiple acquisition documents using a questionnaire, store performance work statement formats and templates in an easily updatable central Web repository, and demonstrate an intuitive Web accessible application that will automatically generate an electronic staffing process via notifications. ***FY 2010 Accomplishments:*** Ebusiness capabilities critical to meet the enterprise-wide needs of the procurement community by including contingency capabilities for 3 in 1 and Contingency Acquisition Support Model.			
Accomplishments/Planned Programs Subtotals	10.323	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Ebusiness capabilities critical to meet the enterprise-wide needs of the procurement community by including contingency capabilities for 3 in 1 and Contingency Acquisition Support Model.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	7.421	7.973	7.220	-	7.220	7.232	7.107	6.771	6.978	Continuing	Continuing
P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	7.421	7.973	7.220	-	7.220	7.232	7.107	6.771	6.978	Continuing	Continuing

Note

We changed the name of the PE from "Nuclear and Conventional Physical Security Equipment" to "Nuclear and Conventional Physical Security/Countering Nuclear Threats." It is important to highlight Combating Nuclear Threats given the potential spread of weapons of mass destruction (WMD) and how WMD threatens the security of the United States, its allies, and US deployed forces. As President Obama has repeatedly stated, nuclear-armed terrorists are “the most immediate and extreme threat to global security,” and thereby to the security of the United States.

A. Mission Description and Budget Item Justification

This program coordinates system development and demonstration for nuclear and conventional physical security equipment (PSE) technology and systems as well as for countering nuclear threats throughout DoD. The funding has been centralized in this Defense-wide Program Element (PE) since the early 1990s and represents a substantial portion of all DoD PSE RDT&E funding. The program supports the protection of DoD personnel and facilities in tactical and fixed scenarios for both the nuclear and conventional environments. Priorities for this Program Element’s RDT&E efforts are driven by inputs from QDR guidance, COCOMs (Joint Urgent Operational Need Statements {JUONS}), Services, analysis reports, such as “Protecting the Force: Lessons from Fort Hood (January 2010), the Integrated Unit, Base, and Installation Protection (IUBIP) Cost Benefits Analysis (CBA), and DoD Directive 5210.41M (Nuclear Weapon Security Manual: DoD Nuclear Weapon Environment-Specific Requirements) directed requirements and associated Deviation Reports.

The funds are used to provide PSE advanced component development and prototypes for individual Service and Joint requirements that lead to capability in three functional mission areas: (1) nuclear physical security; (2) countering nuclear threats; and (3) conventional physical security. The projects under the Program Element either (a) lead to Programs of Record, (b) become technology insertions into existing programs; or (c) advance to being a certified COTS product. The overall program element initiatives are coordinated by three Groups: the Security Policy Verification Committee (SPVC), the Countering Nuclear Threats Working Group (CNTWG) and the Physical Security Equipment Action Group (PSEAG). The SPVC, with Air Force, Navy and Defense Threat Reduction Agency (DTRA) membership, reviews and prioritizes nuclear physical security and countering nuclear threat requirements and recommends technology projects for solutions: the CNTWG has oversight over CNT projects, and the PSEAG, with membership by all four Services and DTRA, performs similar functions for conventional requirements and solutions. When applicable, projects overlap both the nuclear and conventional environments, seeking synergism and commonality in solutions.

With few exceptions, each Service sponsors RDT&E efforts for technologies and projects that have COCOM and multi-Service applications. To avoid duplication, the SPVC and PSEAG assign projects to the Services and DTRA, as directed in DoD Instruction 3224.03, to assure continuity and development of expertise in Department-wide key technology areas. Specific examples include the Army being responsible for Interior and Exterior Detection, Security Lighting, Security Barriers and Security Display Units; the Air Force for Exterior Detection/Surveillance, Entry Control, Delay/Denial, Tactical Systems and Airborne Intrusion; the Navy for

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

Waterside Security, Explosive Detection, and Locks, Safes and Vaults; and, under direction from DoD Directive 5210.41M, DTRA for security of Navy and Air Force nuclear assets.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	7.628	7.973	8.609	-	8.609
Current President's Budget	7.421	7.973	7.220	-	7.220
Total Adjustments	-0.207	-	-1.389	-	-1.389
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense Efficiency - Baseline Budget Review	-0.207	-	-0.077	-	-0.077
• Defense Efficiency - Report, Studies, Boards and Commissions	-	-	-0.832	-	-0.832
• Defense Efficiency - Contractor Staff Support	-	-	-0.468	-	-0.468
• Economic Assumptions	-	-	-0.012	-	-0.012

Change Summary Explanation

Reprogramming was used to accommodate the maturation of PSE developmental items from advanced engineering development (BA 4) to system development and demonstration (BA 5). A reduction in PE 0603161D8Z funding reflects the additional funding in this PE.

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	7.421	7.973	7.220	-	7.220	7.232	7.107	6.771	6.978	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The purpose of this program is the system development and validation of conventional and nuclear physical security equipment (PSE) systems for all DoD components. This program supports the protection of tactical, fixed, and nuclear weapons systems, DoD personnel and DoD facilities. The funds are used to provide PSE RDT&E for continuing and evolving individual Service and joint PSE requirements that provide capability in the areas of force protection and tactical security equipment; robotic security systems integration; waterside security systems; explosive detection equipment; locks, safes and vaults; commercial-off-the-shelf (COTS) testing; and nuclear weapons security. A number of RDT&E efforts arising from PE 0603161D8Z will transition to this PE for system demonstration and validation. The PSE program is organized so that representatives from the Army, Navy, Air Force, and Defense Threat Reduction Agency (DTRA) monitor, direct and prioritize potential and existing PSE programs through the auspices of the Physical Security Equipment Action Group (PSEAG) and the Security Policy Verification Committee (SPVC). With few exceptions, each Service sponsors RDT&E efforts for technologies and programs that have multi-service application. This program element supports: 1) the Army's PSE RDT&E efforts in the areas of Interior and Exterior Detection, Security Lighting, Security Barriers and Security Display Units; 2) the Air Force's PSE RDT&E effort in the areas of Exterior Detection/Surveillance, Entry Control, Delay/Denial, Tactical Systems and Airborne Intrusion; 3) the Navy's PSE RDT&E efforts in the areas of Waterside Security, Explosive Detection, and improved technology for Locks, Safes and Vaults; and 4) DTRA's PSE RDT&E efforts that enhance the security of Navy and Air Force nuclear assets. The program element also supports all four Services' identification and redesign of developmental, non-developmental, and commercial-off-the-shelf equipment to meet physical security requirements. Activities within this program will seek to reduce risk associated with integrating, fielding, and supporting the equipment once it becomes a part of the overall security system.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Automated Vulnerability Evaluation for Risks of Terrorism (AVERT)	1.041	2.249	1.305
Description: NUCLEAR PHYSICAL SECURITY The Department of Defense has a requirement to utilize a standardized approach for Modeling and Simulation analysis to assist in risk management, determining system vulnerabilities and choosing potential upgrades at nuclear weapon-based facilities and installations. AVERT (Automated Vulnerability Evaluation for Risks of Terrorism) is the current commercial off-the-shelf product undergoing software Verification, Validation and Accreditation (VV&A) to determine its feasibility of use in the DoD environment. Both the Air Force and Navy will utilize this product to determine vulnerabilities.			
FY 2010 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Prepared Server in Albuquerque to be moved to DTRA HQ at Fort Belvoir, VA to be placed in the DTRA Experimental Laboratory (DEL) • Renewed AVERT Professional licenses for eight sites. • Completed Validation, Verification and Accreditation (VV&A) confirming software, software development process, modeling process and library development • Trained military and contractor personnel in use of AVERT ***FY 2011 Plans:*** • Provide additional software development/refinement, as required • Continue required training ***FY 2012 Plans:*** - Implementation of DoD wide use of a Verified, Validated, & Accredited Automated Vulnerability Evaluation for Risks of Terrorism (AVERT) software. - Develop Modeling & Simulation Center of Excellence.			
Title: Weapons Storage Vault TSB - INL ***Description:*** NUCLEAR PHYSICAL SECURITY This program focuses on research and evaluation efforts to assess improvised explosive formed projectile (EFP) and military conical shaped charge (CSC) threats against the Weapons Storage Vault (WSV) or similar systems, that prove themselves to be commensurate with, or greater than, the lethality of the current threat developed for the WSV Composite Armor System (CAS) solution. ***FY 2010 Accomplishments:*** - Conduct validation testing of structure, designed and constructed using cast-in place reinforced concrete. ***FY 2011 Plans:*** - Conduct follow on testing for possible transition to MILCON - Determine potential replacement for sand walls. ***FY 2012 Plans:*** - Transition to MILCON	0.564	0.426	0.416
Title: Battlefield Anti-Intrusion System (BAIS) ***Description:*** CONVENTIONAL PHYSICAL SECURITY	2.256	2.129	3.328

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The BAIS is a type classified unattended tactical ground sensor system that provides early detection and classification of vehicles and personnel to enhance soldier survivability and time available to determine appropriate tactical response. Equipment requirements were developed by the US Army Infantry Center, Fort Benning, GA, in conjunction with the US Army Military Police School, Fort Leonard Wood, MO. A 2003 approved Operational Requirements Document (ORD) supports this requirement. ***FY 2010 Accomplishments:*** • Continued fielding to current level of 1,140 systems to US Army units; being used in theater and in great demand by the war fighter. • Continued Production Verification Testing-2 of Modernization Enhancements, Aberdeen Test Center, Aberdeen Proving Ground, MD. • Participated in the Feb 2010 Army Expeditionary Warrior Experiment, Fort Benning GA. • Drafted BAIS Increment 2 Capability Product Document (CDD) 4QFY10 from Maneuver Center of Excellence (MCoE). ***FY 2011 Plans:*** • Anticipate BAIS Increment 2 CDD approval 3QFY11. • Perform analysis with Maneuver Center of Excellence (MCoE), perform to determine impacts of incorporating BAIS Modernization enhancements into the production contract. • Generate Engineering Change Proposal (ECP) to incorporate results of BAIS Modernization enhancements into production contract; conduct Government Configuration Control Board meetings for review and approval of ECP. • Generate contract modification to incorporate ECP into production contract; begin production contractor implementation. ***FY 2012 Plans:*** - Produce 50 initial articles and 50-200 thereafter			
Title: Lighting Kit, Motion Detector (LKMD) ***Description:*** CONVENTIONAL PHYSICAL SECURITY LKMD Increment 2 is a small modular unattended tactical ground sensor-based early warning system. It is designed to provide early detection and warning in order to enhance force effectiveness and increase situational awareness during all types of combat operations or missions ranging from small scale contingencies and Military Operations in Urban Terrain up to high intensity combat. The LKMD provides programmable responses of illumination and sound, resulting in increased operational reaction time for individuals, teams, squads, or platoons. Upon detection of a target entering the protected area, the LKMD will activate the light modules providing a pre-programmed response of visible, infrared, or visible strobe illumination. Additionally, the motion sensor	0.316	0.341	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
module will provide a pre-programmed response of an audible or silent alarm and send alarm data, including images of the target, to the hand-held remote control module, notifying the operator of a detected target. LKMD can operate as a tactical, stand-alone system or is capable of being integrated into existing and future force protection and physical security systems. ***FY 2010 Accomplishments:*** • Analyzed, in conjunction with US Army Maneuver Support Center of Excellence (MSCoE), Soldier and ATEC feedback received during and after the conduct of SDD testing for recommended performance enhancements. • Determined the need for and generated three Engineering Change Proposals (ECPs) to enhance lighting control and to remove unnecessary data messages on the remote control module. • Conducted Government Configuration Control Board meetings resulting in approval and implementation of one lighting control ECP and one data message correction ECP. ***FY 2011 Plans:*** - Complete Increment 1 Production Verification Testing - Conduct CONUS fieldings including First Unit Equipped - Receive Increment 2 Draft CDD - Generate Increment 2 Analysis of Alternatives (AoA) Study Guide - Conduct Increment 2 Materiel Development Decision (MDD) Meeting - Generated AoA Study Plan and begin AoA study - Begin generation of Milestone A or B acquisition documentation			
Title: Force Protection Equipment Demonstration (FPED) VIII ***Description:*** CONVENTIONAL PHYSICAL SECURITY FPED is the largest DOD event of its kind featuring live display of Commercial Off-The-Shelf equipment solutions (COTS) to current and evolving force protection and physical security challenges. There are twenty categories of equipment for exhibitors to demonstrate items of equipment designed to reduce vulnerabilities to terrorism, including improvised explosive devices, and enhance the overall security of US and allied interests. FPED provides decision-makers the opportunity to observe COTS force protection equipment available for procurement and testing within 90 days. ***FY 2010 Accomplishments:*** • Placed subcontracts into position for multimedia, database design, and web master support and hosting services. • Initiated planning for the next FPED scheduled for May 19-21, 2011 at the Stafford, VA Regional Airport. • Initiated site surveys and vendor siting process.	1.373	1.935	1.172

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Signed Memorandum of Agreement and Hold Harmless Agreement with Stafford Regional Airport, Stafford, VA for execution of FPED. ***FY 2011 Plans:*** - Award Phase II of the FPED management support contract - Award follow-up support contracts to Earthcare Technologies and Empire Media Group - Continue to collect and approve CD input - Continue the vendor siting process - Host FPED 17-19 May 11 ***FY 2012 Plans:*** • Place subcontracts into position for multimedia, database design, and web master support and hosting services. • Initiate planning for the next FPED in FY13 • Initiate site surveys and vendor siting process. • Sign Memorandum of Agreement and Hold Harmless Agreement with Stafford Regional Airport, Stafford, VA for execution of FPED.			
Title: Advanced Container Security Device ***Description:*** CONVENTIONAL PHYSICAL SECURITY This project adapts the capabilities of the Department of Homeland Security (DHS) Container Security Device (CSD) to meet Navy/DoD physical security, anti-tamper, and situational awareness requirements for munitions transport and storage. The DHS CSD “fingerprints” the interior volume of a container or railcar, and detects changes caused by door opening or sidewall breach. The Advanced CSD will be optimized for the munitions storage environment to reduce nuisance and false alarms, and is suitable for inter-modal transportation with containers in motion. Supporting Requirements Documents: IBDSS CDD Detect 1,6,7; Navy ATFP Ashore CDD 4.7, 4.8, 4.9 & 4.10; OPNAVINST 5530.13C ***FY 2010 Accomplishments:*** • Conducted HERO Assessment ***FY 2011 Plans:*** • Commence Information Assurance certification • Field 25 units • Issue procurement package ***FY 2012 Plans:***	0.098	0.170	0.333

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Procurement packages			
Title: Physical Security of Storage Magazines ***Description:*** CONVENTIONAL PHYSICAL SECURITY At the request of the Under Secretary of Defense (Intelligence) (OUSD (I)), the DoD Lock Program conducted tests on existing magazine door designs. Results indicate many doors provide less than 10 minutes of resistance against attacks using commercially available tools. Therefore, security for current storage magazines must rely heavily on manpower to keep adversaries from gaining access to sensitive assets. The purpose of this project is to develop design criteria, for new construction and to retrofit existing structures, to provide 10 minutes of forced entry protection. Supporting Requirement Documents: Tier 1 - 2.1.1.1 IUBIP ICD JAN08, Capability Gap Priority 19, DoDD 5100.76M. ***FY 2010 Accomplishments:*** • Conducted Explosive and Ballistic Tests on Guam Door Design • Completed Guam Door Design and Submitted to Defense Explosives and Safety Board • Finished Prototype for Thermal Relocker Burn Bar Tests • Identified performance specifications for Magazine Door transition • Installed six doors at Eglin AFB ***FY 2011 Plans:*** • Provide Acquisition Field Support ***FY 2012 Plans:*** - Design and test prototype for transitioning to the Services for implementation. - Transition to MILCON/Weapon Storage Area structure refresh.	0.196	0.213	0.333
Title: Short Range Threat Detection Systems ***Description:*** CONVENTIONAL PHYSICAL SECURITY Various systems have been developed to identify threat devices on personnel. These systems detect a person borne threat at a short range of 30 meters or closer. Several of these systems have been built and tested individually but a comparative test and evaluation needs to be conducted to determine the benefits and limitations of each system. The test and evaluation reports for short range threat imaging will be made available to all of the services and other government agencies. JUONS CC-0325, JUONS CC-0315, IUBIP ICD, IEDD ICD, JSEOD ICD, IBDSS CDD, USCENTCOM FY10-15 Integrated Priority List (IPL)	0.294	0.255	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: • BAA Sources Sought Announcement • Selection of systems to participate • Design Test Plan • Test all but ionizing radiation systems • Begin test report ***FY 2011 Plans:*** • Test ionizing radiation systems • Finalize report • Provide SME support to acquisition programs to identify systems to meet their particular needs			
Title: Joint Requirements Working Group ***Description:*** CONVENTIONAL PHYSICAL SECURITY The JRWG is a permanent working group established under the auspices of DOD PSEAG in accordance with DODI 3224.03 of 1 October 2007. Its assigned responsibilities include, but are not limited to, the review and harmonization of conventional RDT&E of Physical Security Equipment (PSE) proposed, as well as, ongoing projects. ***FY 2010 Accomplishments:*** This is an on-going working group charged with validating requirements ***FY 2011 Plans:*** This is an on-going working group charged with validating requirements ***FY 2012 Plans:*** This is an on-going working group charged with validating requirements	0.211	0.255	0.333
Title: PSEAG Strategic Plan ***Description:*** CONVENTIONAL PHYSICAL SECURITY The primary purpose of this project is to (1) propose a study plan for approval, (2) review the current PSEAG business model, (3) interview key personnel in key organizations, (4) propose a ten-year Strategic Plan for approval, (5) and publish the approved plan reflecting a newly approved vision, mission, goals, objectives and associated metrics. ***FY 2010 Accomplishments:***	0.294	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
(1) propose a study plan for approval, (2) review the current PSEAG business model, (3) interview key personnel in key organizations, (4) propose a ten-year Strategic Plan for approval, (5) and publish the approved plan reflecting a newly approved vision, mission, goals, objectives and associated metrics.			
Title: Interactive Voice Response (IVR) System ***Description:*** CONVENTIONAL PHYSICAL SECURITY The Interactive Voice Response System will provide DoD personnel with access to current security equipment information by phone 24 hours a day / 7 days a week / 365 days per year. This will be accomplished by incorporating a biometric (voice) identification capability into the current Tech Transfer Hotline system. ***FY 2010 Accomplishments:*** - Integrate into Navy/Marine Corps Internet	0.049	-	-
Title: PSEAG Program RDT&E Integration ***FY 2010 Accomplishments:*** • Coordinated and facilitated all programmatic efforts associated with entire program, including administration of entire Program Element, conduct of program management and financial reviews, and information sharing meetings.	0.729	-	-
Accomplishments/Planned Programs Subtotals	7.421	7.973	7.220

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

The program performance metrics are established/approved through the DoD Physical Security Equipment Action Group (PSEAG) and the Security Policy Verification Committee (SPVC). The cost, schedule and technical progress of each project is reviewed at quarterly PSEAG and SPVC meetings. Performance variances are addressed and corrective action is implemented as necessary.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BAIS	MIPR	PM-FPS (USA):Ft. Belvoir, Virginia	3.023	0.954	May 2011	3.630	May 2012	-		3.630	Continuing	Continuing	
LKMD	MIPR	PM-FPS (USA):Ft. Belvoir, Virginia	1.422	0.704	Apr 2010	-		-		-	Continuing	Continuing	
FPED	MIPR	FM-FPS:Ft. Belvoir, VA	1.280	2.788	Dec 2010	1.051	Dec 2011	-		1.051	Continuing	Continuing	Continuing
Lock, Vaults, Safes	MIPR	NAVFAC/ESC:San Diego, CA	0.645	0.681	Jan 2010	0.941	Jan 2010	-		0.941	Continuing	Continuing	Continuing
AVERT	MIPR	DTRA:Ft. Belvoir, VA	0.877	0.960	Jan 2010	1.198	Jan 2011	-		1.198	Continuing	Continuing	Continuing
MDARS	MIPR	PM-FPS (USA):Ft. Belvoir, Virginia	1.000	-		-		-		-	Continuing	Continuing	
Joint Requirements Working Group	MIPR	PM-FPS (USA):Ft. Belvoir, Virginia	-	-		0.400	Jan 2012	-		0.400	Continuing	Continuing	
		Subtotal	8.247	6.087		7.220		-		7.220			

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Locks, Safes, and Vaults	MIPR	NAVFAC:San Diego, CA	0.116	0.076	Dec 2010	-		-		-	Continuing	Continuing	
AVERT	MIPR	DTRA:Ft. Belvoir, VA	0.760	0.546	Dec 2010	-		-		-	Continuing	Continuing	
		Subtotal	0.876	0.622		-		-		-			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BAIS	MIPR	PM-FPS (USA):Ft. Belvoir, Virginia	1.041	0.200	Feb 2011	-		-		-	Continuing	Continuing	
Locks, Safes, and Vaults	MIPR	PM-FPS (USA):Ft. Belvoir, Virginia	0.241	0.214	Feb 2011	-		-		-	Continuing	Continuing	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	PROJECT P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	1.282	0.414		-		-		-			

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BAIS	MIPR	PM-FPS (USA):Ft. Belvoir, Virginia	0.350	0.150	Dec 2010	-		-		-	Continuing	Continuing	
LKMD	MIPR	PM-FPS (USA):Ft. Belvoir, Virginia	0.717	0.200	Dec 2010	-		-		-	Continuing	Continuing	
FPED	MIPR	PM-FPS (USA):Ft. Belvoir, Virginia	0.400	0.500	Dec 2010	-		-		-	Continuing	Continuing	
		Subtotal	1.467	0.850		-		-		-			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	11.872	7.973		7.220		-		7.220			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	**PROJECT** P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604161D8Z: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	**PROJECT** P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
AVERT Training, Modeling, and Software Devoplment and Support	3	2010	4	2011
Refine BAIS Interfaces with C4ISR Components	2	2010	2	2011
LKMD Increment 1 Product Qualification and Verification Testing	1	2010	4	2010
ACDS System Certification and Demo	3	2010	4	2010
Refine BAIS size and weight	2	2010	4	2011
BAIS Product Improvement Modernization for production systems	2	2011	4	2011
Develop BAIS remote sensor activiation/deactivation capability	1	2010	2	2010
Feasibility Study of MDARS Integration	3	2010	4	2010
SDD of LKMD Increment 2	1	2010	4	2010
Execute FPED VIII	2	2011	2	2011
BAIS Product Verification Endurance Testing	1	2010	3	2010
AVERT Model Development and Risk Assessment	1	2010	3	2010
IVR System Certification and Demo	3	2010	4	2010

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604165D8Z: *Prompt Global Strike Capability Development*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	159.416	239.861	204.824	-	204.824	236.750	325.784	510.680	535.027	Continuing	Continuing
P165: *Prompt Global Strike*	159.416	239.861	204.824	-	204.824	236.750	325.784	510.680	535.027	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) was established in response to guidance associated with the Fiscal Year (FY) 2008 President's Budget, which called for the consolidation and reduction of funding for Conventional Prompt Global Strike (CPGS) efforts for the Navy (Conventional Trident Modification) and Air Force (Common Aero Vehicle) programs. Resources in this PE support the continued development of technologies to continue to enable technology transitions to close the conventional prompt global strike warfighting capability gap. The program uses a national team approach to ensure coordination between the Services, Agencies and National Research Laboratories and places emphasis on the pursuit of integrated portfolio objectives for a national CPGS system. This program funds the design, development and acquisition of guidance systems, boosters, mission planning capabilities, mission enabling capabilities, reentry systems, and payload delivery vehicles (PDVs). It procures modeling and simulation activities, command and control capabilities, test range support, as well as launch system infrastructure. Additionally, funding may be applied towards efforts such as strategic policy compliance and advanced non-nuclear warheads. The emphasis on demonstrating component and subsystem maturity on order to ultimately offer solutions for an existing warfighting capability gap dictates the need for risk reduction initiatives. With the Air Force Conventional Strike Missile (CSM) serving as the lead design to demonstrate a possible materiel solution for the CPGS warfighting capability gap, the Army Hypersonic Glide Body (HGB) design provides an alternative risk reduction path within the Air Force CSM concept. In FY 2011, funding for each of the individual service initiatives will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604165D8Z: *Prompt Global Strike Capability Development*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	165.563	239.861	233.239	-	233.239
Current President's Budget	159.416	239.861	204.824	-	204.824
Total Adjustments	-6.147	-	-28.415	-	-28.415
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-5.001	-			
• Defense Efficiency - Baseline Budget Review	-1.146	-	-4.600	-	-4.600
• Defense Efficiency - Report, Studies, Boards, and Commissions	-	-	-22.561	-	-22.561
• Defense Efficiency - Contractor Staff Support	-	-	-0.936	-	-0.936
• Economic Assumptions	-	-	-0.318	-	-0.318

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604165D8Z: *Prompt Global Strike Capability Development*	PROJECT P165: *Prompt Global Strike*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P165: *Prompt Global Strike*	159.416	239.861	204.824	-	204.824	236.750	325.784	510.680	535.027	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This Program Element (PE) was established in response to guidance associated with the Fiscal Year (FY) 2008 President's Budget, which called for the consolidation and reduction of funding for Conventional Prompt Global Strike (CPGS) efforts for the Navy (Conventional Trident Modification) and Air Force (Common Aero Vehicle) programs. Resources in this PE support the continued development of technologies and enable technology transitions to close the conventional prompt global strike warfighting capability gap. The program uses a national team approach to ensure coordination between the Services, Agencies and National Research Laboratories and places emphasis on the pursuit of integrated portfolio objectives for a national CPGS system. This program funds the design, development and acquisition of guidance systems, boosters, mission planning capabilities, mission enabling capabilities, reentry systems, and payload delivery vehicles (PDVs). It procures modeling and simulation activities, command and control capabilities, test range support, as well as launch system infrastructure. Additionally, funding may be applied towards efforts such as strategic policy compliance and advanced non-nuclear warheads. The emphasis on demonstrating component and subsystem maturity in order to ultimately offer solutions for an existing warfighting capability gap dictates the need for risk reduction initiatives. With the Air Force Conventional Strike Missile (CSM) serving as the lead design to demonstrate a possible materiel solution for the CPGS warfighting capability gap, the Army Hypersonic Glide Body (HGB) design provides an alternative risk reduction path within the Air Force CSM concept. In FY 2011, funding for each of the individual service initiatives will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Hypersonic Glide Experiments and Concept Demonstration Development/Support	84.385	147.035	204.824
Description: This sub-project describes efforts to develop technologies and assess capabilities that could potentially enable transformational changes in the arena of global, time critical strike. The objectives of this sub-project are to: - Assess vehicle technologies - Exercise the ability to use a high-payload capacity system, which may demonstrate responsive, global reach against high value targets - Assess the feasibility of producing an affordable solution to fill the CPGS capability gap It will mature technologies that could lead to a system capable of global reach from Continental United States (CONUS) with the following characteristics: effects on targets in a very short-period of time from execution order; non-ballistic flight over the majority of the flight path; positive control from launch to impact; adequate cross-range/ maneuverability to avoid overflight issues; controlled stage drop over Broad Ocean area(BOA), and provides for in-flight target updates. The technologies developed will			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604165D8Z: *Prompt Global Strike Capability Development*	PROJECT P165: *Prompt Global Strike*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
have cross-service and cross-concept applicability and will be developed through close coordination among DoD components. Specific initiatives within this sub-project include: - Continue systems engineering/development and assembly, integration and test (AI&T) of one weaponized payload delivery vehicle (PDV) - Continue flight test planning and support - Integrated PDV vehicle with Minotaur IV Lite launch vehicle and conduct one operationally relevant land impact flight test demonstration - Perform analysis of the military utility of vehicle performance with respect to thermal protection materials, aerodynamics and control surfaces, navigation, guidance, control, and weapons performance - Integrate HTV-2 vehicles with Minotaur IV Lite Launch Vehicles and conduct two BOA impact flight test demonstrations ***FY 2010 Accomplishments:*** FY2010-2011 activities : conducted the HTV-2 flight experiments; finalized design concept for the CSM Payload Delivery Vehicle to include thermal protection materials, guidance systems, mission planning, and command and control; completed qualification of a Minotaur launch vehicle for a CPGS mission analysis of launch system infrastructure requirements utilizing other ballistic missile propulsion programs, and matured/demonstrated technologies associated the high speed demonstration of conventional munitions. The available resources for this sub-project were utilized to procure the PDV, warhead and booster to support the planned CSM weaponized flight test. ***FY 2011 Plans:*** DELETE: FY2011-2012 activities will: conduct the HTV-2 flight experiments; finalize design concept for the CSM Payload Delivery Vehicle to include thermal protection materials, guidance systems, mission planning, and command and control; complete qualification of a Minotaur launch vehicle for a CPGS mission analysis of launch system infrastructure requirements utilizing other ballistic missile propulsion programs, and mature/demonstrate technologies associated the high speed demonstration of conventional munitions. The available resources for this sub-project will be utilized to procure the PDV, warhead and booster to support the planned CSM weaponized flight test. ***FY 2012 Plans:*** Will accomplish the HTV-2 Critical Design Review (CDR); and the Technical Readiness Review for the CSM Payload Delivery Vehicle; and deliver the KEP warhead. The flight experiment and delta PDR will include thermal protection materials, guidance systems, mission planning, and command and control; complete qualification of a Minotaur launch vehicle for a CPGS mission analysis of launch system infrastructure requirements utilizing other ballistic missile propulsion programs, and mature/demonstrate			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604165D8Z: *Prompt Global Strike Capability Development*	PROJECT P165: *Prompt Global Strike*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
technologies associated the high speed demonstration of conventional munitions. The available resources for this sub-project will be utilized to procure the PDV, warhead and booster to support the planned CSM weaponized flight test.			
Title: Alternative Re-Entry System/Warhead Engineering and Delivery Vehicle Options/Development	46.644	62.017	-
Description: This sub-project will test and evaluate alternative re-entry systems and delivery vehicle options to include Hypersonic Glide Body (HGB) and will assess the feasibility of producing an affordable alternate solution to fill the CPGS capability gap. It will mature technologies that could lead to a system capable of global reach from Continental United States (CONUS) with the following characteristics: effects on targets in a very short-period of time from execution order; non-ballistic flight over the majority of the flight path; positive control from launch to impact; adequate cross-range/maneuverability to avoid overflight issues; and controlled stage drop over BOA. The technologies developed will have cross-service and cross-concept applicability and will be developed through close coordination among DoD components. ***FY 2010 Accomplishments:*** The focus of this sub-project in FY2010-2011 was on the advanced hypersonic weapon effort. This effort researched hypersonic aerodynamics and control systems to enable a wide variety of future capabilities not currently available for rapid global response. The AHW, as a risk mitigation effort in support of the Air Force CPGS project, developed and demonstrated the capability of an HGB based Alternative Payload Delivery Vehicle (APDV) through a two-flight test schedule. The objectives of this subproject were: - Demonstrated the maturity of technologies related to thermal management, precise navigation and control, and in-flight communications with a hypersonic object. - Demonstrated the successful delivery of an operationally useful payload weight at operational/intercontinental distances. - Documented the applicability of the proven AHW technologies to a family of CPGS concepts and implementations. - Documented the design of the AHW HGB to support future acquisition activities as required. - Executed the initial integration and flight demonstration phase (Flight 1A) of the AHW including fabrication, assembly and integration of a single AHW flight vehicle in preparation for a flight test in FY11. The AHW HGB vehicle launched from the Pacific Missile Range Facility utilizing a Strategic Targets System (STARS) booster stack, separate from the launch vehicle, and fly a hypersonic glide trajectory to impact on the Reagan Test Site at Kwajalein Atoll, demonstrating flight systems integration, gathering thermal protection system performance data to assist in anchoring analytical models, and demonstrating advanced aerodynamic control features. ***FY 2011 Plans:*** The current focus of this sub-project in FY2011-2012 is on the advanced hypersonic weapon effort. This effort researches hypersonic aerodynamics and control systems to enable a wide variety of future capabilities not currently available for rapid			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604165D8Z: *Prompt Global Strike Capability Development*	PROJECT P165: *Prompt Global Strike*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
global response. The AHW, as a risk mitigation effort in support of the Air Force CPGS project, develops and demonstrates the capability of an HGB based Alternative Payload Delivery Vehicle (APDV) through a two-flight test schedule (Reduced to one flight test). The objectives of this subproject are: - Demonstrate the maturity of technologies related to thermal management, precise navigation and control, and in-flight communications with a hypersonic object. - Demonstrate the successful delivery of an operationally useful payload weight at operational/intercontinental distances. - Document the applicability of the proven AHW technologies to a family of CPGS concepts and implementations. - Document the design of the AHW HGB to support future acquisition activities as required. - Execute the initial integration and flight demonstration phase (Flight 1A) of the AHW including fabrication, assembly and integration of a single AHW flight vehicle in preparation for a flight test in FY11. The AHW HGB vehicle will be launched from the Pacific Missile Range Facility utilizing a Strategic Targets System (STARS) booster stack, separate from the launch vehicle, and fly a hypersonic glide trajectory to impact on the Reagan Test Site at Kwajalein Atoll, demonstrating flight systems integration, gathering thermal protection system performance data to assist in anchoring analytical models, and demonstrating advanced aerodynamic control features.			
Title: Test Range Development ***Description:*** This sub-project will complete design, assembly and delivery of power/telemetry subsystems; assemble and integrate components to check command/control and verify range safety functions. ***FY 2010 Accomplishments:*** - Performed range modifications in preparation for technology demonstrations. Activities included the upgrade of the TP01 launch pad which has not been maintained - Built targets to support technology demonstrations - Purchased range assets to support technology demonstrations, which include ships and aircraft to receive in-flight telemetry data transmitted by the PDV (store and burst mode) ***FY 2011 Plans:*** - DELETE : Perform range modifications in preparation for technology demonstrations. Activities will include the upgrade of the TP01 launch pad which has not been maintained - Build targets to support technology demonstrations - Purchase range assets to support technology demonstrations, which include ships and aircraft to receive in-flight telemetry data transmitted by the PDV (store and burst mode)	20.508	21.571	-
Title: OSD CPGS Studies	7.879	9.238	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604165D8Z: *Prompt Global Strike Capability Development*	PROJECT P165: *Prompt Global Strike*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This sub-project supports emergent CPGS study efforts. In addition, it also supports application of the Prompt Global Strike Analysis of Alternatives results, requirements development, CPGS basing alternatives, analysis and defining of mission enabling technologies, and measures to avoid conventional missile launch ambiguity. Finally, it supports administrative activities associated with the management and execution of this PE. ***FY 2010 Accomplishments:*** This sub-project supported emergent CPGS study efforts. In addition, it also supported application of the Prompt Global Strike Analysis of Alternatives results, requirements development, CPGS basing alternatives, analysis and defining of mission enabling technologies, and measures to avoid conventional missile launch ambiguity. Finally, it supported administrative activities associated with the management and execution of this PE. ***FY 2011 Plans:*** In FY2011-2012 the OSD CPGS studies activity will complete the study of strategic policy compliance to include CPGS basing alternatives and measures to avoid misinterpretation of intent; policy compliance, and operational requirements validation. The activity will conduct studies associated with mission planning systems and battle damage assessment. It will further develop and implement measures of system design performance to evaluate the performance of the primary and alternative PDV design, as well as booster, and basing considerations. This activity will also perform analysis of technology readiness of key aspects of the CPGS designs.			
Accomplishments/Planned Programs Subtotals	159.416	239.861	204.824

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

This PE provides resources for technical studies, as well as design, development and test activities; project support; combatant requirements application; and systems design analyses necessary to establish and execute an integrated Conventional Prompt Global Strike program. These efforts will produce: a demonstration and application of advanced technologies to support a combatant command materiel solution requirement; a DoD-wide coordinated assessment of kinetic non-nuclear system and operations concepts in a manner that supports planning, budgeting, and execution of further system concept development and procurement by the Services; resources for technical and operations projects and research, development and test and evaluation in such areas as PGS risk mitigation, strategic policy compliance, mission planning, reentry system thermal protection, advanced propulsion, advanced payload delivery and dispensing mechanisms, weapon system command and control, advanced non-nuclear warheads, modeling and simulation, launch system infrastructure, and other enabling capabilities that address emerging mission requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604165D8Z: *Prompt Global Strike Capability Development*	PROJECT P165: *Prompt Global Strike*

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604165D8Z: *Prompt Global Strike Capability Development*	PROJECT P165: *Prompt Global Strike*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hypersonic Glide Experiments and Concept Demonstration Development/Support	Allot	SPACE AND MISSILE CENTER:LOS ANGELES, CA	133.105	147.035	Sep 2011	204.824		-		204.824	Continuing	Continuing	Continuing
Alternative Reentry System/ Warhead Engineering and Delivery Vehicle Options/ Development	Allot	SPACE AND MISSILE DEFENSE CENTER:HUNTSVILLE, AL	60.469	62.017	Sep 2011	-		-		-	Continuing	Continuing	Continuing
Test Range Development	Allot	SPACE AND MISSILE CENTER:LOS ANGELES, CA	28.875	21.571	Sep 2011	-		-		-	Continuing	Continuing	Continuing
OSD CPGS Studies	Allot	OFFICE OF THE SECRETARY OF DEFENSE:WASHINGTON, DC	12.750	9.238	Sep 2011	-		-		-	Continuing	Continuing	Continuing
		Subtotal	235.199	239.861		204.824		-		204.824			

	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	235.199	239.861		204.824		-		204.824			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604165D8Z: *Prompt Global Strike Capability Development*	PROJECT P165: *Prompt Global Strike*

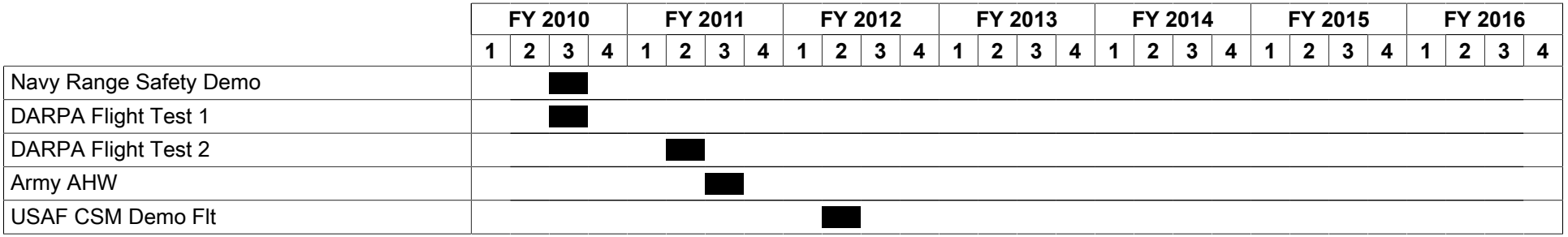

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604165D8Z: *Prompt Global Strike Capability Development*	**PROJECT** P165: *Prompt Global Strike*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Navy Range Safety Demo	3	2010	3	2010
DARPA Flight Test 1	3	2010	3	2010
DARPA Flight Test 2	2	2011	2	2011
Army AHW	3	2011	3	2011
USAF CSM Demo Flt	2	2012	2	2012

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0604709D8Z: *Joint Robotics EMD*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	4.720	4.155	2.782	-	2.782	2.564	2.612	2.751	4.150	Continuing	Continuing
609: *Joint Robotics EMD*	4.720	4.155	2.782	-	2.782	2.564	2.612	2.751	4.150	Continuing	Continuing

A. Mission Description and Budget Item Justification

(U) This Program Element (PE) was established in response to Congressional guidance to consolidate DOD robotic programs on unmanned ground systems and related robotic technologies in order to increase focus of the Services' robotic programs on operational requirements. Technologies in the PE support the continued development of technologies in Budget Activity 3 and 4 (PEs 0603711D8Z and 0603709D8Z) for technology transitions and transformations and closing war fighter requirement capability gaps. By exercising its oversight role through a technology advisory board, O-6 Council and Senior Steering Group (Flag level), Joint Ground Robotics applies this PE to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. This PE supports the effort to overcome technology barriers in thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Manipulation Technologies, Collaborative Operations, Interoperability, Man-portable Unmanned Ground System Technologies, and Technology Transition/ Transformation. The purpose is to further the development and fielding of affordable and effective mobile ground robotic systems, develop and transition technologies necessary to meet evolving user requirements, and serve as a catalyst for insertion of robotic systems and technologies into the force structure. Through application of funds against the thrust areas of unmanned ground system technologies, this PE supports the integration of technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedites technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Within this PE, funded efforts will continue the delivery of advanced technology needs directed at enhancing the war fighters' capabilities identified during concept development, operational assessments and field feedback of current unmanned systems.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604709D8Z: *Joint Robotics EMD*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	4.720	4.155	3.126	-	3.126
Current President's Budget	4.720	4.155	2.782	-	2.782
Total Adjustments	-	-	-0.344	-	-0.344
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense Efficiency - Baseline Review	-	-	-0.028	-	-0.028
• Defense Efficiency - Report, Studies, Board, and Commission	-	-	-0.078	-	-0.078
• Defense Effiiciency - Contractor Staff Support	-	-	-0.234	-	-0.234
• Economic Assumptions	-	-	-0.004	-	-0.004

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in previous budget submission contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604709D8Z: *Joint Robotics EMD*	PROJECT 609: *Joint Robotics EMD*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
609: *Joint Robotics EMD*	4.720	4.155	2.782	-	2.782	2.564	2.612	2.751	4.150	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

(U) This Program Element (PE) was established in response to Congressional guidance to consolidate DOD robotic programs on unmanned ground systems and related robotic technologies in order to increase focus of the Services' robotic programs on operational requirements. Technologies in the PE support the continued development of technologies in Budget Activity 3 and 4 (PEs 0603711D8Z and 0603709D8Z) for technology transitions and transformations and closing war fighter requirement capability gaps. By exercising its oversight role through a technology advisory board, O-6 Council and Senior Steering Group (Flag level), Joint Ground Robotics applies this PE to enable coordination between the Services and places emphasis on interoperability and commonality among unmanned ground systems. This PE supports the effort to overcome technology barriers in thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Manipulation Technologies, Collaborative Operations, Interoperability, Man-portable Unmanned Ground System Technologies, and Technology Transition/ Transformation. The purpose is to further the development and fielding of affordable and effective mobile ground robotic systems, develop and transition technologies necessary to meet evolving user requirements, and serve as a catalyst for insertion of robotic systems and technologies into the force structure. Through application of funds against the thrust areas of unmanned ground system technologies, this PE supports the integration of technologies into representative models or prototype systems in a high fidelity and realistic operating environment and expedites technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Within this PE, funded efforts will continue the delivery of advanced technology needs directed at enhancing the war fighters' capabilities identified during concept development, operational assessments and field feedback of current unmanned systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Autonomous and Tactical Behaviors	2.805	2.003	1.731
Description: Development of vehicle onboard intelligence and tactical behaviors for greater autonomy. These technologies will increase the war fighters' ability to accomplish military task with greater effectiveness, while simultaneously reducing their risk to exposure and harm. ***FY 2010 Accomplishments:*** 1) Human Presence Detection (HPD) from a Moving Platform project provided a capability for man-portable unmanned ground vehicles (UGVs). HPD technology is critical for any robotic operation requiring a robot to operate around, respond to, or interact with a human. This project has transitioned from PE0603709D8Z as the TRL level matured. -Began work on semi-ruggedized prototype. -Detected human presence at a minimum range of 20 m at 90 percent detection rate and 5 percent false alarm rate.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604709D8Z: *Joint Robotics EMD*	PROJECT 609: *Joint Robotics EMD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
2)Tactical Behaviors for Explosive Ordnance Disposal (EOD) project applied autonomous capabilities to the Man Transportable Robotic Systems (MTRS) that will enable operators to focus their attention primarily on the EOD mission, rather than the vehicle navigation, dramatically decrease the workload on EOD technicians during operations in OIF and OEF, and increasing the efficiency of IED defeat missions. -Conducted payload design reviews for visualization payload. -Received delivery of an advanced visualization payload for the MK1 and/or MK2. -Conducted payload design reviews for autonomy payload. -Received delivery of an autonomy payload for the MK1 and/or MK2. -Tested the payloads in relevant EOD scenarios. -Completed test reports detailing the payloads performance. -Began transition plan in collaboration with PMS-EOD. 3) Remote Check point developed and demonstrated a prototype unmanned ground vehicle (UGV) system with semiautonomous capabilities to support operations at remote security checkpoints. -Began integration of a comprehensive package consisting of Lidar, Robotic Intelligent Kernal (RIK), Fido XT, Sarnoff Iris Recognition, several cameras and an intelligent electronics payload will be integrated with a Talon UGV. QNA / Foster-Miller will integrate two light detection and ranging (lidar) systems onto a Talon with a 3DoF manipulator and use its existing IR cameras and 300:1 PTZ camera. -Began development of software algorithms to detect the head of the occupant(s) using Talon PTZ camera with greater than 90 percent accuracy. -Began development of software and hardware for accurate positioning of the compact iris capture device once the head of the occupant has been located to be integrated into the robotic command and control system. -Began development of platform control behaviors for navigation, positioning, ensuring guarded arm motion, controlling arm movement to inspect interior, exterior and underside, and scanning with Fido by manipulating a camera through the window, under the vehicle or around the exterior. -Began to design user interface for International Component for Unicode (ICU). -Began writing user manual for the robotic system and its components as a famiarilization aid for military personnel to operate and evaluate the prototype system. -Began planning phases of participation in Capstone Demonstration of the sensors integrated Talon UGV system completing mission tasks of a remote checkpoint. 4) Cargo Unmanned Ground Vehicle (UGV) project will assist the Marine Corps War fighting Lab (MCWL) in continuing to evaluate the utility of an UGV to conduct supply distribution by modifying and integrating a robotic vehicle control kit that can			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604709D8Z: *Joint Robotics EMD*	PROJECT 609: *Joint Robotics EMD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
be applied to current USMC cargo vehicles to determine if emerging robotic technology can be exploited to substitute manned vehicles with un-manned vehicles in order to reduce the exposure of Marines to lethal attacks. This project is also funded by the Marine Corps. -Integrated 1st Medium Tactical Vehicle Replacement (MTVR) Unmanned Ground Vehicle (UGV) concept demonstrator which included the following: Integrated perception sensors, processing hardware, vehicle interfacing hardware, software for interpreting sensor data and user input, software governing vehicle behavior and decision making, and vehicle's communication hardware and software. -Began development and vehicle integration of Operator Control Unit (OCU) which includes: installing OCU hardware and software for communications, user interface, and mission planning on a 2nd MTVR. ***FY 2011 Plans:*** 1) Autonomous Navigation for Small Unmanned Ground Vehicles (ANSU) project is to increase the war fighter's capability by developing, maturing, demonstrating and transferring autonomy technologies that will significantly increase the functional capabilities of small unmanned ground vehicle systems. This project has transitioned from PE0603709D8Z as the TRL level matured. -Demonstrate 3rd generation sensor suite capable of being tightly integrated with host platforms and additional capability of nighttime operations. -Perform night-time operation of the waypoint navigation, retro-traverse, and guarded tele-operation functions. 2) Human Presence Detection (HPD) from a Moving Platform project will provide a capability for man-portable Unmanned Ground Vehicles (UGVs). HPD technology is critical for any robotic operation requiring a robot to operate around, respond to, or interact with a human. Detect human presence at a minimum range of 25 meters at 95 percent detection rate and 3 percent false alarm rate using a semi-rugged prototype from a small-sized vehicle at a military operations on an urban terrain training site. 3) Remote Check point will develop and demonstrate a prototype Unmanned Ground Vehicle (UGV) system with semiautonomous capabilities to support operations at remote security checkpoints. -Complete integration of a comprehensive package consisting of Lidar, Robotic Intelligent Kernal (RIK), Fido XT, Sarnoff Iris Recognition, several cameras and an intelligent electronics payload will be integrated with a Talon UGV. QNA / Foster-Miller will integrate two light detection and ranging (lidar) systems onto a Talon with a 3DoF manipulator and use its existing IR cameras and 300:1 PTZ camera. -Complete development of software algorithms to detect the head occupant(s) using Talon PTZ camera with greater than 90 percent accuracy.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604709D8Z: *Joint Robotics EMD*	PROJECT 609: *Joint Robotics EMD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Complete development of software and hardware for accurate positioning of the compact iris capture device once the head of the occupant has been located to be integrated into the robotic command and control system. -Complete development of platform control behaviors for navigation, positioning, ensuring guarded arm motion, controlling arm movement to inspect interior, exterior and underside, and scanning with Fido by manipulating a camera through the window, under the vehicle or around the exterior. -Designed user interface for International Component for Unicode (ICU). -Write user manual for the robotic system and its components as a familiarization aid for military personnel to operate and evaluate the prototype system. -Participate in Capstone Demonstration of the sensors integrated Talon UGV system completing mission tasks of a remote checkpoint. 4) Cargo Unmanned Ground Vehicle (UGV) project will assist the Marine Corps War fighting Lab (MCWL) in continuing to evaluate the utility of an Unmanned Ground Vehicle (UGV) to conduct supply distribution by modifying and integrating a robotic vehicle control kit that can be applied to current USMC cargo vehicles to determine if emerging robotic technology can be exploited to substitute manned vehicles with unmanned vehicles in order to reduce the exposure of Marines to lethal attacks. -Test and evaluate first and second vehicle in a Limited Technical Assessment (LTA) and Limited Objective Experiment (LOE). -Install a second autonomous system on a third MTVR. -Train Marines to operate, plan for, and execute convoy operations with the Cargo UGV MTVR concept demonstrator. -Marines will conduct simulated force-on-force tactical Combat Logistics Patrols (CLPs) in an interactive experiment for immediate assessment and refinement of the Concept of Operations and the Tactics (CONOPS), techniques & Procedures (TTPs). -Re-test all CONOPS and TTPs in subsequent simulated combat convoy events. ***FY 2012 Plans:*** 1)Cargo Unmanned Ground Vehicle (UGV) project will assist the Marine Corps Warfighting Lab (MCWL) in continuing to evaluate the utility of an Unmanned Ground Vehicle (UGV) to conduct supply distribution by modifying and integrating a robotic vehicle control kit that can be applied to current USMC cargo vehicles. Project will determine if emerging robotic technology can be exploited to substitute manned vehicles with unmanned vehicles in order to reduce the exposure of Marines to lethal attacks. -Make improvements to autonomous system and the OCU based on lessons learned during LTA 1 and LOE 1 -Conduct LTA 2. -Perform a four week LOE for Marines to assess the net military utility and determine the poetential for deploying for an Extended Evaluation.			
Title: Collaborative Operations	0.975	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

Description: Integrate communication, mission planning, interface technologies, and advanced intelligence capabilities to support collaborative operations between manned and unmanned systems. Develop and assess several strategies to enhance tele-operation of current Unmanned Ground Vehicles (UGV) and collaborative Unmanned Air Vehicles (UAV) teams. Development of these technologies will enable unmanned systems to support warfighter concepts of operation that are envisioning unmanned systems working in collaboration across domains (air, ground, and maritime) to execute tactical missions and complex military tasks.

FY 2010 Accomplishments:
1) Combat ID for Unmanned Robotic Systems will integrate hardware and software solutions for autonomous detection of friend-or-foe on the battlefield. Identifies people and vehicles from a moving object. By determining if people or objects are friend-or-foe at a standoff range; this technology provides greater protection to the war fighter.
-Designed and built the base sensor head and processing platform.
-Designed and built soldier payload (GPS and RF ranging radio) and sensor calibration and testing.
-Produced sensors and processing boards.
-Produced bench top assembly for initial testing.
-Began work on stereo based People/Vehicle Detection.
-Began work on developing and integrating algorithms for real-time stereo for range estimation, people detection from range and appearance, motion-based people detection and integrated detection and localization.
-Began work on Radio Frequency Ranging based Friend/Foe ID to incorporate dual band mesh radio nodes to provide communication between the robot and soldier payloads.

FY 2011 Plans:
FY 2010 dollars will continue to provide the following FY 2011 planned accomplishments.

1) Combat ID for Unmanned Robotic Systems will integrate hardware and software solutions for autonomous detection of friend-or-foe on the battlefield. Identifies people and vehicles from a moving object. By determining if people or objects are friend-or-foe at a standoff range, this technology provides greater protection to the war fighter.
-Complete work on stereo based People/Vehicle Detection.
-Complete work on developing and integrating algorithms for real-time stereo for range estimation, people detection from range and appearance, motion-based people detection and integrated detection and localization.
-Complete work on Radio Frequency Ranging based Friend/Foe ID to incorporate dual band mesh radio nodes to provide communication between the robot and soldier payloads.
-Complete enhancements and evaluations using Light Detection And Ranging (LIDAR).
-Developing software for interfacing with the LIDAR unit in the enhanced sensor head.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Integrate shape features extracted from the LIDAR data in the people detection module and evaluate the performance of the people detection module with and without the LIDAR data.			
Title: Interoperability	0.433	1.400	0.500
Description: Software algorithms and interface technologies will facilitate sharing of data across unmanned platforms and domains, and with C2 systems as well as interchangeability of mission payloads and unmanned chassis. Such interoperability will enable collaborative operations between manned and unmanned systems as well as among unmanned systems in differing domains. ***FY 2010 Accomplishments:*** 1) Automatic Payload Deployment System (APDS) will develop and build a highly modular, universal payload deployment module. These payloads will be built around a universal, modular payload framework that can accept various payload modules including different radios for network connectivity. This project transitioned from PE 0603709D8Z as the TRL level matured. -Developed and built infrared radiation illuminator payloads. -Developed and built sensor payloads. -Modified the deployed. -Developed base station software module. 2) Robotic Systems Technical and Operational Metrics Correlation project is to improve a program manager or user's ability to objectively assess robotic systems by developing a tool that can predict the mission-specific operational performance from technical measures to within 80 percent. -Collected operational data. -Collected technical data. -Performed correlation and analysis on operational and technical data. -Developed logical extentions to model. -Incorporated model with extentions into software. 3) Robotics Standards Harmonization project will develop and gain approval of the DOD position on robotic standards. The attributes of the resulting harmonized (set of) open standards shall be that they satisfy the needs of all domains; use commercial standards to the greatest extent feasible; be coordinated and integrated such that duplication is eliminated; and evolve over time to meet the changing needs of users and developers. -Completed competition rules and scoring guidelines. -Updated competition interface design documents.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604709D8Z: *Joint Robotics EMD*	PROJECT 609: *Joint Robotics EMD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Completed domain analysis. -Received and reviewed white paper describing interoperability profiles for harmonization of multiple standards based on domain and mission. -Prepared position document. ***FY 2011 Plans:*** 1) 3D Visualization for EOD Robots project will develop, mature, demonstrate, and transition technologies that will provide the Explosive Ordinance Disposal (EOD) Unmanned Ground Vehicles (UGV) operators with an improved situational awareness and visualization capability for manipulation. The system will provide a high-resolution 3-dimensional model of the object of interest during a mission in near real-time. -Demonstrate generation of a 3 dimensional model of a complex object from sensors on an EOD class UGV that is > 95 percent complete and a max error of < 5 percent within 5 minutes of collecting the data. -Demonstrate the localization of the manipulator relative to the object with an accuracy of 5 percent using the same sensors used to build the model. -Demonstrate the real time localization of the manipulator relative to the object with an accuracy of 3 percent using the same sensors used to build the model. -Demonstrate an application that allows the operator to view the model and the manipulator/robot in its actual position from various perspectives and allows the operator to control the manipulator in an effective manner from the virtual scene. ***FY 2012 Plans:*** Projects for this capability area will be selected by July 2011.			
Title: Man-Portable Intelligence ***FY 2011 Plans:*** Project will be determined in June FY11 ***FY 2012 Plans:*** Projects for this capability area will be selected by 2011.	-	0.280	0.250
Title: Manipulation Technologies ***Description:*** Incorporate existing technologies, enable greater range of robotic manipulation, support the development of mobile manipulation, and improve manipulator performance. Development of these technologies will enable unmanned systems to conduct highly dexterous tasks that today are accomplished manually, but currently place war fighters in extremely vulnerable and dangerous situations.	-	0.286	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2011 Plans: 1) Advanced Hydraulic Actuation will build a high-dexterity robot manipulator based on advanced hydraulic actuators that will significantly extend the mission capabilities over existing ground robotics. Specifically it will be able to easily manipulate objects over 100 pounds, it will be energy efficient, will achieve precise control both in terms of position and force, and will have at least 7 degrees of freedom providing the dexterity for complex tasks. Program transitioned from PE 0603709D8Z as TRL level matured. -Complete bench top testing of the selected manipulator to include workspace, lift, speed, and dexterity. -Complete bench top testing of the hydraulic power supply to include weight and power output based on load, speed, and efficiency. -Complete bench top testing of the hydraulic arm operator control unit. -Demonstrate the viability of the advanced hydraulic actuation manipulator for a medium sized (164 lb) robot. ***FY 2012 Plans:*** 1) Highly Dexterous Manipulator for Explosive Ordinance Disposal (EOD) Operators will develop a Highly Dexterous Manipulator that approaches the dexterity of a human and is targeted for use on a small EOD Unmanned Ground Vehicle (UGV) with a total vehicle weight (including the manipulator) of 164 pounds. The manipulator is to be capable of performing bimanual tasks as required in the Capability Development Document (CDD) for Advanced Explosive Ordnance Disposal Robotic System (AEODRS). The direct benefit to the warfighter is increased performance and capability over the current state-of-the-art which will translate into reduced mission time. Project transitioned from 0603711D8Z as technology readiness level matured. -Complete control system development. -Conduct Human-Machine Interfaces (HMI) Phase II demonstration. -Conduct demonstration. -Complete system integration. -Perform demonstration in relevant environment.			
Title: Technology Transition / Transformation ***Description:*** Facilitate integration of technologies to ongoing programs: exploit best features of past and ongoing efforts, e.g., interface technologies (Human Robot Interaction) and autonomous operations. Robotics technologies are being matured with the express intent of transitioning them out of the laboratory to either development programs of record, licensing to industry to foster COTS solutions, or integration onto fielded systems. ***FY 2010 Accomplishments:*** Funding will be utilized to assist in transition or transformation of the following but not limited to: 1)Tactical Behaviors for Explosive Ordinance Disposal (EOD) Robots	0.507	0.186	0.301

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
2)Automatic Payload Deployment System (APDS) ***FY 2011 Plans:*** Funding will be utilized to assist in transition or transformation of the following but not limited to: 1) Autonomous Navigation for Small Unmanned Ground Vehicles (UGVs) 2)Human Presense and Detection 3)Man-Portable ISR Robot 4)Remote Check point 5)* Advanced Hydraulic Actuator * 3D Visualization for EOD Robots ***FY 2012 Plans:*** 1) Highly Dexterous Manipulation for EOD Operators 2)Cargo Unmanned Ground Vehicles 3)Long Range Vision for Obstacle Detection			
Accomplishments/Planned Programs Subtotals	4.720	4.155	2.782

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0603709D8Z: *Joint Robotics Program*	15.072	9.727	11.129		11.129	11.259	10.704	10.403	10.978	Continuing	Continuing
• 0603711D8Z: *Joint Robotics Program/Autonomous Systems*	10.289	8.791	9.710		9.710	10.071	10.281	10.520	10.857	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

1. Technologies to be funded & developed are reviewed by Joint Capability Area focused working groups and the Joint Staff Functional Capabilities Boards to determine progress, transition plans, and relevance of each project.
2. Project plans are submitted, evaluated and analyzed by the Joint Robotics Ground Enterprise (JGRE) management and technical staff for risk and progress.
3. Project progress toward goals and milestones is assessed during mid-year and end-of-year reviews.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604709D8Z: *Joint Robotics EMD*	PROJECT 609: *Joint Robotics EMD*

4. Technologies developed by the JGRE are tracked and documented using the DOD Technical Readiness Level (TRL) scale for developing TRL 3 or 4 technologies to TRL 6 and adhering to the integrated baselines with regard to cost and schedule.

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604709D8Z: *Joint Robotics EMD*	PROJECT 609: *Joint Robotics EMD*

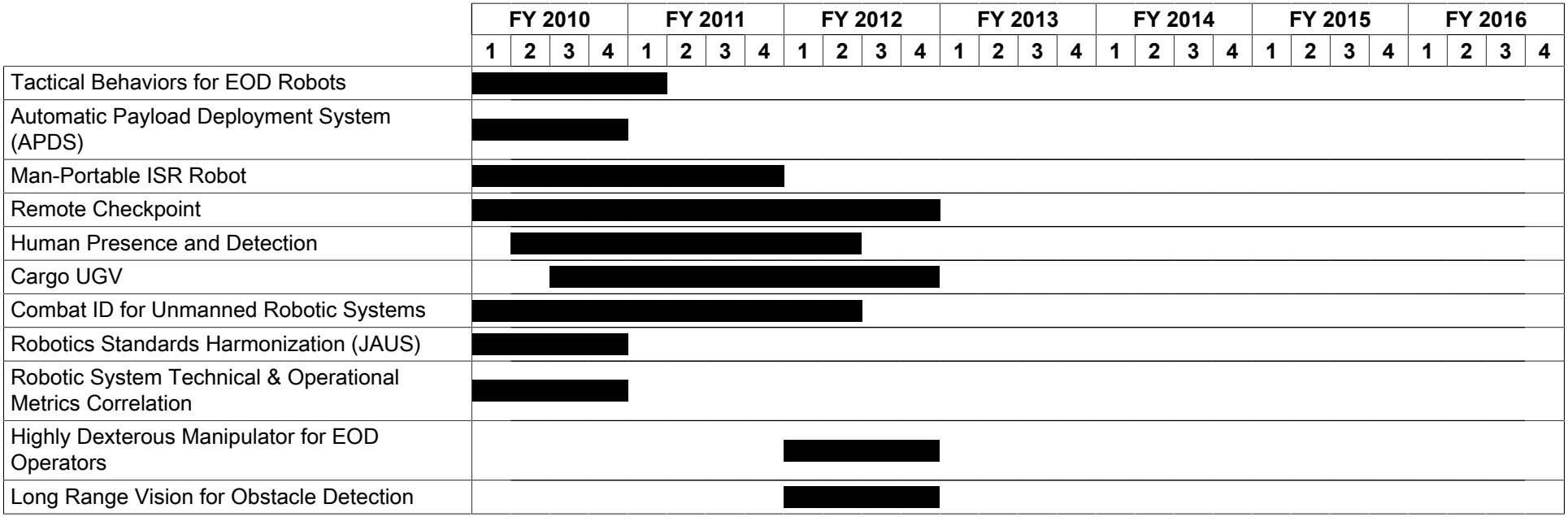

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604709D8Z: *Joint Robotics EMD*	**PROJECT** 609: *Joint Robotics EMD*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Tactical Behaviors for EOD Robots	1	2010	1	2011
Automatic Payload Deployment System (APDS)	1	2010	4	2010
Man-Portable ISR Robot	1	2010	4	2011
Remote Checkpoint	1	2010	4	2012
Human Presence and Detection	2	2010	2	2012
Cargo UGV	3	2010	4	2012
Combat ID for Unmanned Robotic Systems	1	2010	2	2012
Robotics Standards Harmonization (JAUS)	1	2010	4	2010
Robotic System Technical & Operational Metrics Correlation	1	2010	4	2010
Highly Dexterous Manipulator for EOD Operators	1	2012	4	2012
Long Range Vision for Obstacle Detection	1	2012	4	2012

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0604771D8Z: *Joint Tactical Information Distribution System (JTIDS)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	19.856	20.954	17.395	-	17.395	17.296	17.647	17.823	17.965	Continuing	Continuing
771: *Link-16 Tactical Data Link (TDL) Transformation*	19.856	20.954	17.395	-	17.395	17.296	17.647	17.823	17.965	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The P771 program was developed to transform Joint Tactical Data Links (TDLs) (primarily the J Series of Link 16, Link 22, and Variable Message Format (VMF)) to comply with the Department's Net Centric (NC) vision. The program encapsulates the Department's needs for joint and combined network-enabled capabilities for TDLs and is being expanded to assess and transform Joint data link communications, such as the Multifunctional Advanced Data Link (MADL) and Common Data Link (CDL) to the NC standards, and to ensure interoperability and seamless integration with Joint communication systems. The platform integration and implementation of these network capabilities into the operational environment will enhance the decision cycle between sensor-to-shooter; providing information-superiority, shared environment that enhances combat power by increasing speed of command, higher tempo of operations, greater lethality, increased survivability, and self synchronization. This transformation must balance the needs of the warfighters with the requirements for NC operations.

The funds provided by this budget request were used in 2010 to ensure the timely implementation of NC goals by incorporating these network-enabling capabilities into the Joint Tactical Data Enterprise Services (TDES) Migration Plan (JTMP). The JTMP 2010 update will be used as a baseline to support the Office of the Secretary of Defense (OSD) in further analyzing the validated warfighter capability needs for the primary TDL, MADL, and CDL communications across the full set of mission areas in order to identify possible solutions to meet those needs across the range of Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) and assess the synchronization planning and capability delivery management activities to support NC objectives. In addition the funds were used to develop an integrated joint airborne architecture, ensuring adherence to the GIG enterprise wide technical baseline. The NC team will work with the Services in this analysis and with our Allied/Coalition partners in future analysis to validate the acquisitions and fielding plans needed for NC goals. In addition, an Advanced Tactical Data Link (ATDL) assessment was conducted which evaluated data link alternatives for Major Combat Operations and Irregular Warfare/Stability Operations, and to evaluate data link alternatives for contested and anti access airspace scenarios. This study will be expanded in 2011 and 2012 to incorporate the CDL family of tactical Intelligence, Surveillance, and Reconnaissance (ISR) communications, including the systems used with Unmanned Aerial Systems (UAS) and the Integrated Broadcast Service (IBS), with subsequent year's funding being used to expand the JTMP to include the results of this CDL analysis. A final area to be addressed will be to ensure that TDLs systems are properly integrated with the other systems parts of the NC architecture, utilizing a new analysis tool called the Integrated Master Schedule (IMS).

The program will continue to fund the development of spectrum management for the TDES systems, and to fund for the coordination of these development efforts with the Services and other US and International spectrum management agencies, including the Federal Aviation Agency and National Telecommunications and Information Administration, to obtain Link 16 spectrum certification. In addition, funding will continue to be used to support the Defense Information System's Agency's (DISA) and Services' interoperable improvement efforts and processes in the development of common standards and protocols. This effort includes initiating the Joint Interoperability Enhancement Process (IEP) that allows operators, engineers, and program managers to verify capabilities and identify issues in a design with Joint /

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604771D8Z: *Joint Tactical Information Distribution System (JTIDS)*

Allied units prior to system fielding, or with fielded systems to identify required systems changes for systems upgrade planning. DISA and Joint Forces Combatant Command lead the effort to transform the current standards and interoperability management tools to a common set of Joint network-enabled standards to ensure adherence to the GIG enterprise wide technical baseline and for implementation of future TDES capabilities. These joint standards, protocols, and processes will be used for implementation and testing to ensure the TDES capabilities are synchronized with the development and integration timelines of other planned network-enabled Global Information Grid (GIG) initiatives. The threats to the networking waveforms and the Joint NC migration will also be looked at in cooperation with the Intelligence agencies.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	20.466	20.954	21.254	-	21.254
Current President's Budget	19.856	20.954	17.395	-	17.395
Total Adjustments	-0.610	-	-3.859	-	-3.859
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.610	-	-	-	-
• OSD Studies Contracts Efficiency	-	-	-1.681	-	-1.681
• DoD Service Support Contract Efficiency	-	-	-1.104	-	-1.104
• Economic Assumptions	-	-	-0.024	-	-0.024
• NII Contractor Efficiency	-	-	-1.050	-	-1.050

Change Summary Explanation

FY 2010: Program adjustment -0.610 million.

FY 2011: No change.

FY 2012: Economic Assumptions -0.024 million, OSD Studies Contracts efficiency -1.681 million, NII Contractor efficiencies -1.050 million, DoD Service Support Contracts efficiency -1.104 million.

Studies contract Efficiencies will be realized by reducing the number of studies that we participate in while still supporting enterprise-wide information technology goals critical to DoD Mission.

Service Support Contract efficiencies will be realized by reducing the reliance on DoD Service Support Contractors by utilizing in-house government support in a constrained personnel and resource environment.

NII reduction to contractor staff efficiencies will be realized by continuing to provide policy, guidance, program oversight, and resource management for command and control (C2), communications, spectrum, information assurance, and Information Technology programs with significantly less contractor support.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604771D8Z: *Joint Tactical Information Distribution System (JTIDS)*

Economic Assumptions will be realized by reducing our reliance on contractors while still achieving OASD(NII)/DoD CIO goals and objectives while in a constrained personnel and resource environment.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Common Joint Tactical Information Initiatives	19.856	20.954	17.395
FY 2010 Accomplishments: – Data Link Migration engineering support: Published updated 2010 TDES migration plan including ISR and started to include selected Allied data; using modeling and simulation capability to assess advanced data link capability integration to the GIG and the technical capabilities and the operational benefits of the advanced technologies. – Joint Initiatives: Advanced Tactical Data Link (ATDL) Assessment Updates to include: Conducted DoD wide ATDL Assessment of data link requirements for Major Combat Operations (Contested Environment) and Stability Operations/Irregular Warfare (Un-contested). Identified specific capability gaps and ATDL options for closing the gaps. Assessed costs of integrating candidate ATDLs to various levels on service platforms. Identified promising areas to focus R&D for next generation ATDLs. – Joint TDES migration: Technical assement, planning and coordination of joint TDL interoperability and transformation including: Continued the expansion of the TDES community participation including the incorporation of the ISR and UAS communities, and beginning the incorporation of Allied partners into the JTMP process. – High Data Rate Airborne Terminal (HDRAT) Analysis: Initiated HDRAT analysis. Conducted SATCOM loading Analysis and ISR Effectiveness Analysis; assessed cost and performance of Technical Alternatives. – Joint and International engineering: modeled and simulated various coalition aerial networks, showing interoperability between US aircraft in US-only nets, US aircraft in coalition networks, and allied aircraft ; solution creation for the integration of data link interoperability with Allied systems – Net Centric Engineering: Build the necessary Net Centric architecture and capabilities definition documents to include the following: 1) updated Net Centric Architectures to reflect developments in waveform, enterprise services, information assurance, and knowledge management; 2) verified proper network performance; 3) Completed Information FSA analysis; – GIG Engineering support: Developed analytic tools to support technical and performance analysis including :1) modeled and simulated various conflict scenarios, showing network performance when transitioning between aerial layer of network and GIG; 2)Updated the IMS to reflect all airborne both manned and UAV) platforms as well as ground mobile networking systems; 3) conducted analysis to verify development of CDL backbone and Information Assurance (IA) technologies permit rapid, seamless exchange of large ISR data files from tactical edge to GIG and back. – Joint Interoperability Enhancement Process (IEP): Updated policy, directives and the analytic evaluation process to define and plan : 1) implementation of TDES technologies to include tactical information integration and configuration management 2) continues to develop policy-based network management preferred system concept and methodology for enterprise situational awareness			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604771D8Z: *Joint Tactical Information Distribution System (JTIDS)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Provided Spectrum Support for TDES systems: Conducted analysis for the national and international spectrum management boards and forums to ensure Joint Service access to TDES related spectrum to support worldwide operations and training in CONUS ***FY 2011 Plans:*** – Joint Initiatives: Advanced Tactical Data Link (ATDL) Assessment Updates to include: review of DoD efforts to develop and test an ATDL with greater system throughput and performance in a jammed environment; assessments of Service plans to field aircraft and other platforms with an ATDL; assess the plan to field gateways to allow aircraft on ATDL to remain interoperable with aircraft that won't be upgraded, within DoD and Allies; and assess Allied participation alternatives for ATDL networks. – Joint TDES migration: Technical assessment, planning and coordination of joint TDL interoperability and transformation including: Continue the expansion of the TDES community participation including the incorporation of the ATDL with the associated gateway efforts and the enhanced Joint and Allied partnership within the JTMP process. – Net Centric Engineering: Create the necessary Net Centric architecture and capabilities definition documents to include the following: 1) update Net Centric Architectures to reflect developments in waveform, enterprise services, information assurance, and knowledge management; 2) verify proper network performance; 3) Complete Information FSA analysis; – High Data Rate Airborne Terminal (HDRAT) Analysis: Complete HDRAT analysis. Conduct SATCOM loading Analysis and ISR Effectiveness Analysis; assess cost and performance of Technical Alternatives. Synthesize findings. – Systems Engineering: Use the Net-Centric Integrated Architecture and modeling and simulation to provide Net Centric input to the Future Force Development Guidance and provide a dynamic behavior of the architecture. Refine, develop, analyze future capabilities for advanced waveforms and data links for terrestrials (line-of-sight) and satellite (beyond line-of-sight) systems. This includes detailed engineering analysis of technology. Alternatives and interoperability. – Joint and International engineering: model and simulate various coalition aerial networks, showing interoperability between US aircraft in US-only nets, US aircraft in coalition networks, and allied aircraft. – Joint Interoperability Enhancement Process (IEP): Implement in the Joint community and standardize within Service processes the policy, directives and the analytic evaluation process to define and plan : 1) expansion of TDES technologies to include tactical information integration and configuration management 2) continue to develop policy-based network management preferred system concept and methodology for enterprise situational awareness – Data Link Migration Engineering Support: 1) Update 2010 TDES migration plan 2) develop modeling and simulation capability to support data link technical and operational capability assessments including integration to other components of the GIG – GIG Engineering support: Develop analytic tools to support technical and performance analysis including :1) model and simulate various conflict scenarios, showing network performance when transitioning between aerial layer of network and GIG; 2)Update the IMS to reflect all airborne both manned and UAV platforms as well as ground mobile networking systems; 3)			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604771D8Z: *Joint Tactical Information Distribution System (JTIDS)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
conduct analysis to verify development of CDL backbone and IA technologies permit rapid, seamless exchange of large ISR data files from tactical edge to GIG and back. – Provide Spectrum Support for TDES systems: Conduct analysis for the national and international spectrum management boards and forums to ensure Joint Service access to aerial networking and TDES related spectrum to support worldwide operations and training in CONUS ***FY 2012 Plans:*** – Joint Initiatives: Advanced Tactical Data Link (ATDL) Assessment Updates to include: Direct DoD efforts to develop and test an ATDL with greater system throughput and performance in future operational environments; assessments of current Service plans to field aircraft and other platforms with an ATDL; and assess any additional Allied participation alternatives for ATDL networks. – Joint TDES migration: Technical assessment, planning and coordination of joint TDL interoperability and transformation including: Continue the expansion of the TDES community participation including the incorporation of the ATDL with the associated gateway efforts and the enhanced Joint and Allied partnership within the JTMP process – Advanced Waveforms: Further refine, develop, analyze future capabilities for advanced waveforms and data links for terrestrial (line-of-sight) and satellite (beyond line-of-sight) systems. This includes detailed engineering analysis of new technologies, alternatives, and interoperability. – Joint and International engineering: continue to model and simulate various coalition aerial networks, showing interoperability between US aircraft in US-only nets, US aircraft in coalition networks, and allied aircraft. – Joint Interoperability Enhancement Process (IEP): Implement in the Joint community and standardize within Service processes the policy, directives and the analytic evaluation process to define and plan : 1) expansion of TDES technologies to include tactical information integration and configuration management with Link 16, VMF, CDL, and MADL 2) continue to develop policy-based network management preferred system concept and methodology for enterprise situational awareness – Data Link Migration Engineering Support: 1) Final 2012 TDES migration plan 2) Enhance modeling and simulation capability to support data link technical and operational capability assessments including integration to other components of the GIG – Net Centric Engineering: Define the necessary NC architecture and capabilities definition documents to include the following: 1) update NC Architectures to reflect developments in waveform, enterprise services, information assurance, and knowledge management; 2) verify proper network performance; 3) refine Information FSA analysis; – GIG Engineering support: Enhance analytic tools to support technical and performance analysis including :1) continue to model and simulate various conflict scenarios, showing network performance when transitioning between aerial layer of network and GIG; 2)Update the IMS as programs mature through the acquisition cycle to reflect all airborne both manned and UAV platforms as well as ground mobile networking systems; 3) conduct additional analysis to validate the development of CDL backbone and IA technologies			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604771D8Z: *Joint Tactical Information Distribution System (JTIDS)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– System Engineering and Integration Assessment: Continue to use the NC Integrated Architecture and modeling and simulation to provide NC input to the Future Force Development Guidance and provide a dynamic behavior of the architecture. This assessment will support aerial layer studies and support to related AoAs. – Provide Spectrum Support for TDES systems: Continue to conduct analysis for the national and international spectrum management boards and forums to ensure Joint Service access to aerial networking and TDES related spectrum to support worldwide operations and training in CONUS			
Accomplishments/Planned Programs Subtotals	19.856	20.954	17.395

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

In executing JTDL tasking, existing cost-plus contracts will be utilized.
-driven reviews in support of the JCIDS, acquisition and PPBE processes

F. Performance Metrics

Enterprise-Wide Alignment: Accelerate DoD information age transformation to increase the effectiveness and efficiency of the warfighting, intelligence and business missions.
Measures:
- Timely development and issuance of policy and guidance
- Instantiation of enterprise-wide system engineering for the Global Information Grid across DoD

Portfolio Management: Provide for the timely and effective delivery of key Net-Centric capabilities through portfolio management
Measures:
- Key milestones completed for major net-centric acquisitions
- Number of major systems through net-centric event

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0605022D8Z: *Defense Exportablity Program*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	-	-	1.929	-	1.929	1.951	1.957	1.965	1.968	Continuing	Continuing
P013: *Defense Exportability Program (DETA)*	-	-	1.929	-	1.929	1.951	1.957	1.965	1.968	Continuing	Continuing

Note

This is a new start program. The Defense Exportability Program is a result of a USD(AT&L) sponsored legislative proposal for authorities to better prepare warfighting systems for non-US use.

A. Mission Description and Budget Item Justification

This is a new start program. The Defense Exportability Program is a result of a USD(AT&L) sponsored legislative proposal for authorities to better prepare warfighting systems for non-US use. The program funds will be replenished through non-recurring cost recoupment in future Foreign Military Sales (FMS) cases, Cooperative Program MOUs, or direct commercial sales contracts for sale/transfer of DoD systems benefiting from exportability investments. This program funds activities to support identification of major defense acquisition programs for possible export, and the planning for design and incorporation of exportability features during research and development of these programs. Features include, but are not limited to, technology and engineering design activity such as capability differentials, anti-tamper, system assurance, and software assurance. Activities include the development of program protection strategies for the program; the design and incorporation of exportability features into the system; implementation of exportability requirements onto contracts; and research, development, test, and evaluation activities.

Defense exportability features plays a critically important role in United States Government/DoD efforts to build partnership capacity. Funds support building joint and coalition environments by enabling the export of DoD systems to a wide range of partner nations, resulting in improved security and interoperability. In addition to the operational benefits, by providing these resources up front, then collecting 'fair share' non-recurring cost recoupment, the United States and partner nations will save significant resources by more efficiently designing and producing exportable U.S. systems.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605022D8Z: *Defense Exportablity Program*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	1.929	-	1.929
Total Adjustments	-	-	1.929	-	1.929
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Internal Adjustments	-	-	5.000	-	5.000
• Defense Efficiency – Baseline Review	-	-	-3.018	-	-3.018
• Defense Efficiency – Reports, Studies, Boards, and Commissions	-	-	-0.050	-	-0.050
• Economic Assumptions	-	-	-0.003	-	-0.003

Change Summary Explanation

Internal program adjustment to incorporate exportablility features during research and development of programs.

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605022D8Z: *Defense Exportablity Program*	PROJECT P013: *Defense Exportability Program (DETA)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P013: *Defense Exportability Program (DETA)*	-	-	1.929	-	1.929	1.951	1.957	1.965	1.968	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This is a new start program. The Defense Exportability Program fund is a result of a USD(AT&L) sponsored legislative proposal for authorities to better prepare warfighting systems for non-US use. The program funds will be replenished through non-recurring cost recoupment in future Foreign Military Sales (FMS) cases, Cooperative Program MOUs, or direct commercial sales contracts for sale/transfer of DoD systems benefiting from exportability investments. This program funds activities to support identification of major defense acquisition programs for possible export, and the planning for design and incorporation of exportability features during research and development of these programs. Features include, but are not limited to, technology and engineering design activity such as capability differentials, anti-tamper, system assurance, and software assurance. Activities include the development of program protection strategies for the program; the design and incorporation of exportability features into the system; implementation of exportability requirements onto contracts; and research, development, test, and evaluation activities.

Defense exportability features plays a critically important role in United States Government/DoD efforts to build partnership capacity. Funds support building joint and coalition environments by enabling the export of DoD systems to a wide range of partner nations, resulting in improved security and interoperability. In addition to the operational benefits, by providing these resources up front, then collecting 'fair share' non-recurring cost recoupment, the United States and partner nations will save significant resources by more efficiently designing and producing exportable U.S. systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Defense Exportability Program	-	-	1.929
FY 2012 Plans: - Conduct assessment of major defense acquisition programs for exportability. - Establish a process, identifying Service leads and subject matter experts, to provide support to programs, prior to Milestone B, to develop plans for exportability features. - Develop and implement procedures to require contractors to contribute matching funding for exportability features for those programs receiving support. - Develop management and tracking procedures for the program, and for the support provided to programs. Draft and submit the initial annual report to Congress on the program.			
Accomplishments/Planned Programs Subtotals	-	-	1.929

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605022D8Z: *Defense Exportablity Program*	PROJECT P013: *Defense Exportability Program (DETA)*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

TBD

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605027D8Z: *OUSD(C) IT Development Initiative*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	6.764	5.000	4.993	-	4.993	4.991	2.994	-	-	Continuing	Continuing
927: *Next Generation Resource Management System*	4.840	5.000	4.993	-	4.993	4.991	2.994	-	-	Continuing	Continuing
928: *Virtual Training Simulation*	1.924	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

As the Department of Defense strategic, operational and tactical plans and objectives transforms the war fighter with new capabilities and doctrine, the budgeting and accountability of funds used to pursue the Department objectives will become more complicated and detailed for senior leader to make decisions with supporting rationale for the taxpayer. Incorporating information technology toward current and emerging business processes manifesting into a state-of-the art system of systems will result in increasing efficiencies, timely diagnostics, and reducing lifecycle costs to maintain, sustain and repair.

This initiative exploits emerging technology, processes, trends, capabilities, and techniques to incorporate state-of-the-art information technology enabling the ability, agility, and level of fidelity to collect, process, administrate and report resource management data and to automate business processes within a more robust analytical environment within the Office of the Under Secretary of Defense (Comptroller) OUSD(C).

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	5.000	5.000	5.000	-	5.000
Current President's Budget	6.764	5.000	4.993	-	4.993
Total Adjustments	1.764	-	-0.007	-	-0.007
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-0.039	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	1.803	-			
• SBIR/STTR Transfer	-	-			
• Economic Adjustments	-	-	-0.007	-	-0.007

Change Summary Explanation

Project 0928 - Virtual Training Simulation was added in the amount of $1.924 during FY 2010 through a reprogramming action from O&M to fund development of a prototype of a virtual training simulation for users to understand and process transactions within the Enterprise Resource Planning (ERP) Procure to Pay Environment. This was more appropriately funded with RDT&E rather than O&M. This was an FY 2010 Challenge Fund project award to support development of the financial management workforce. Previous reprogrammins of -$.121 to Project 0927 resulted in total reprogrammings of $1.805

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605027D8Z: *OUSD(C) IT Development Initiative*	PROJECT 927: *Next Generation Resource Management System*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
927: *Next Generation Resource Management System*	4.840	5.000	4.993	-	4.993	4.991	2.994	-	-	Continuing	Continuing
Quantity of RDT&E Articles	1	3	1	0	1	1	1				

A. Mission Description and Budget Item Justification

The Department's budget focuses on institutionalizing and financing our capabilities to fight the wars we are in today and the scenarios we are most likely to face in the years ahead, while at the same time providing a hedge against other risks and contingencies. It also begins a fundamental overhaul of the DoD's approach to procurement, acquisition, and contracting. As such, the complex details of budgeting and tracking of funds become increasingly critical to senior leader decision making and to provide accountability to the taxpayer. Incorporating information technology toward current and emerging business processes manifesting into a state-of-the art system of systems will result in increasing efficiencies, timely diagnostics, and reducing lifecycle costs to maintain, sustain and repair.

Today, the Office of the Under Secretary of Defense Comptroller OUSD(C) and the Cost Analysis and Program Evaluation (CAPE) uses at least six distinct automated systems (Comptroller Information System (CIS), PBD Wizard, Program Resource Collection Process (PRCP), GWOT Resource Information Database (GRID)/ Supplemental Resource Collection Process (SRCP), Budget Exhibits Generator and Standard Data Collection System (SDCS) to formulate, justify, and execute DoD budgets. These six or more systems interact with at least several computer-based systems controlled by external organizations and agencies. These systems manage very similar financial information, yet each uses its own scheme for representing information. Much of the information managed by these systems is redundant. Cross-system data representations and redundancies make it difficult to exchange and to reconcile information. The capabilities provided by Comptroller systems, in some cases, fail to deliver services needed by its users, or fail to operate in ways that complement current and emerging business practices. They fail to give executives information in a comprehensible form, making it difficult to draw conclusions. Data disparities and functional redundancy make these systems more costly to keep than they need to be

There is a critical need for the development of a state-of-the-art information technology system to modernize and replace multiple, antiquated legacy systems and processes used to formulate, justify, present and defend the entire Department of Defense Budget in the Office of the Under Secretary of Defense (Comptroller) (OUSD(C)) to meet Title 10 and Title 31 mission and reporting requirements. The Comptroller's plan for mitigating the deficiencies and capability gaps associated with current systems is development of the Next Generation Resource Management System.

This initiative exploits emerging technology, processes, trends, capabilities, and techniques to incorporate state-of-the-art information technology enabling the ability, agility, and level of fidelity to collect, process, administrate and report resource management data and to automate business processes within a more robust analytical environment within the Office of the Under Secretary of Defense (Comptroller) OUSD(C). Not funding this effort increases the risks of critical system failures delaying programming/budget formulation and reporting. Funded efforts will improve the timeliness of resource management reviews and decisions for senior leaders and Congress

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605027D8Z: *OUSD(C) IT Development Initiative*	PROJECT 927: *Next Generation Resource Management System*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Next Generation Resource Management System	4.840	5.000	4.993

Description: Plan, develop, test and evaluate the system components (i.e. unified database, expert system, cross domain security, enterprise service bus, applications, services) and supportability requirements in modernizing the budget formulation, programming execution and reporting capabilities for the Department of Defense. Activities will include, but not be limited to, the preparation all documentation required for Clinger-Cohen Compliance and acquisition regulations, developing requests for proposals, and oversight and management of contracts and deliverables.

FY 2010 Accomplishments:
Conduct Analysis of Alternatives (AoA)- 4QFY10-2QFY11

Request of Proposal – 3QFY10

Contractor has initiated the review and are documenting current and emerging business processes and requirements via interviews with all levels of staff. Product will incorporate recommended business alternatives as well as additional analytical capabilities and assessment of suggested strategies, ways and means to program, budget and report DoD funds with greatly enhanced effectiveness and efficiency. The resultant AoA will recommend a business processes, validated by staff, will form a solid foundation for conducting market research in FY 11 to assess optimal means to exploit emerging technology, processes, trends, capabilities and techniques to incorporate state-of-the-art capabilities in the information technology industry.

FY 2011 Plans:
Conduct Market Investigation - 3QFY11-4QFY11

Develop Acquisition Documentation and Request of Proposal - 2-3QFY11

Contract Award - 3QFY11 for three prototypes for demonstration and testing

Expectation by end of FY11 is to down select from three prototypes to a Single Integrator to finish preliminary component and system design and demonstrate a complete operational system that includes a unified data warehouse, user friendly business logic architecture for programming and budgeting capabilities, analytics and reports, an expert knowledge-based system incorporating user friendly language interface, cross-domain security capability, and design and demonstration of high quality immersive graphical user interface that promotes learning and productivity.

FY 2012 Plans:
Upgrades and Enhancements - 1-4QFY12

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605027D8Z: *OUSD(C) IT Development Initiative*	PROJECT 927: *Next Generation Resource Management System*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Expection by after FY12 to verfiy operational system and to program for upgrades and enhancements.			
Accomplishments/Planned Programs Subtotals	4.840	5.000	4.993

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Competive AoA Contract
4QFY10-2QFY11

Competitive contract for single integrator for design, development, test and evaluation for first two increments resulting in initial operating capability.
Market Investigation (3 prototypes): 3QFY11 - 4QFY11
Downselect to preliminary design: 1-4QFY12
Verification proposed system: 1-4QFY13
Final upgrades: 1-4QFY14

Once infrastructure in place, competitive contracts in the out years for individual services/applications.

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605027D8Z: *OUSD(C) IT Development Initiative*	PROJECT 928: *Virtual Training Simulation*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
928: *Virtual Training Simulation*	1.924	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

$1.924 million is being used to develop an interactive virtual learning appropach to teach financial management professionals analytical, decision-making, communication, customer service and financial skills. The Enterprise Resource Planning Training simiulator (ERPTS) will present a real-world, application-oriented training experience that increases employees' applicable skills and encourages building multiple competencies to include business analytical and financial management. The ERPTS will provide students with knowledge and understanding needed in the Enterprise Resource Planning (ERP) environment.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Virtual Training Simulation	1.924	-	-
Description: For development of a prototype of a virtual training simulation for users to understand and process transactions within the Enterprise Resource Planning (ERP) Procure to Pay Environment. This was an FY 2010 Challenge Fund project award to support development of the financial management workforce. ***FY 2010 Accomplishments:*** The project design began in FY 2010. The learning approach was devised as well as plans to include three scenarios reflecting ERP Procurement to Pay issues. ***FY 2011 Plans:*** Project development will begin in FY 2011. The learning approach will be tested in FY 2011 and will assess systems integration, systems qualifications, functional validation, and systems acceptance test.			
Accomplishments/Planned Programs Subtotals	1.924	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

To develop the system, the Defense Finance and Accounting Service will partner with Navy Underwater Warfare Center in Newport, Rhode island, which has extensive virtual world development experience.

E. Performance Metrics

Not applicable.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605075D8Z: *DCMO Policy and Integration*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	-	41.808	-	41.808	43.235	40.987	43.673	40.879	Continuing	Continuing
0001: *DCMO Policy and Integration*	-	-	41.808	-	41.808	43.235	40.987	43.673	40.879	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Deputy Chief Management Officer (DCMO) is the Principal Staff Assistant (PSA) and advisor to the Secretary and Deputy Secretary of Defense for matters relating to management and improvement of integrated DoD business operations. The DCMO was created to integrate stove-piped business processes and over 2,400 disconnected business systems costing approximately $7B / year to acquire, modernize and operate. The National Defense Authorization Act for 2008 created the DCMO position.

With the disestablishment of the Department of Defense (DoD) Business Transformation Agency (BTA), the DCMO has been directed by the Secretary to transition appropriate oversight and integration functionality heretofore performed by the BTA, into the Office of the DCMO. Although a final organizational construct is nearing completion, the framework would include these functions: Strategic Planning, Performance Management and Reporting (provides for integration of strategic planning activities that drive improvement in DoD's business operations); Technical and Engineering (provides for integrated architecture and systems engineering support for business mission area and staying abreast of technological developments in industry); Business Integration (provides for management of core business mission processes); Information Technology Business Acquisition Oversight and Implementation (provides for ensuring that sound strategic planning, robust architecture and engineering efforts and quality business integration will yield effective IT solutions).

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605075D8Z: *DCMO Policy and Integration*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	41.808	-	41.808
Total Adjustments	-	-	41.808	-	41.808
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• DCMO/BTA Realignment Program Transfer	-	-	46.000	-	46.000
• Defense Efficiencies - Service Support Contracts	-	-	-3.832	-	-3.832
• Economic Assumptions	-	-	-0.271	-	-0.271
• Civilian Manpower Freeze	-	-	-0.089	-	-0.089

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: 0001: *DCMO Policy and Integration*		
Congressional Add: *None*	-	-
Congressional Add Subtotals for Project: 0001	-	-
Congressional Add Totals for all Projects	-	-

Change Summary Explanation

In FY 2012, the Office of the Deputy Chief Management Officer (ODCMO) will have realized transformational reshaping due to disestablishment of the Business Transformation Agency (BTA) and subsequent realignment of select functionality. This growth in scope within Office of the Secretary of Defense (OSD) / ODCMO policy and oversight core mission areas will accommodate greater visibility in orchestrating and synchronizing effective and efficient business operations across all Departmental Components. Thus, as the ODCMO role continues to expand and mature, alignment of management decisions to strategic outcomes in support of the Warfighter is enhanced and ensured. Service Support Contract efficiencies will be realized by reducing the reliance on DoD Service Support Contractors by utilizing in-house government support in a constrained personnel and resource environment.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Planned Efforts for FY2012	-	-	41.808

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605075D8Z: *DCMO Policy and Integration*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: N/A ***FY 2011 Plans:*** N/A ***FY 2012 Plans:*** Ongoing Activities • Deliver Congressional Report on Defense Business Operations (March 2012) • Refine and improve processes for mapping business systems to end-to-end processes • Track, assess and report on Business Enterprise Architecture (BEA) development and systems deployment using Core Business Mission performance measures • Enter, track and report in the Enterprise Transition Plan (ETP) business systems' development and deployment milestones • Update milestone, measures guidance, related templates and workbooks to be included in the ETP and reports to Congress • Analyze progress against business system milestones and document analysis in the Congressional Report on Defense Business Operations • Continue support to the Business Enterprise Common Core Metadata (BECCM) in adjudicating conflicts in data standards across the Core Business Mission (CBM) Areas • Assess and respond to DoD Component Chief Information Officer (CIO) Evaluation Scorecard • Support Acquisition Oversight requirements of Major Automated Information System (MAIS) Major Defense Acquisition Programs (MDAPs) • Support Critical Change Evaluation and Reports Analysis and Review • Analyze BEA content change requests, recommend prioritizations • Continue support to the Defense Sourcing Portfolio FY 2012 Plan • Manage core business mission process and data teams and provide Subject Matter Expert (SME) knowledge and expertise within their domains and between related domains to the BEA build team in the construction of End to End processes. • Enterprise Resource Planning tool integration for Business Integration • Contingency Business Operations with Warfighter Requirements • Develop, coordinate and promulgate polices in support of DoD business operations which will uniformly insure efficiency and consistency in business operations.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605075D8Z: *DCMO Policy and Integration*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Manage Enterprise Data standards to include the standards of the Standard Financial Information Structure (SFIS), Common Human Resources Information System (CHRIS), etc. • Establishing Business Intelligence (BI) standards and services which will access authoritative data sources from anywhere in the Department and present business information to DoD and external customers consistent with performance data standards modeled in the BEA. • Support IT Business Acquisition Oversight by providing technical standards and real time support to PSA and Infrastructure IRBs • Maintain and update Business capability Lifecycle (BCL) and Enterprise Risk Assessment Methodology (ERAM) process, provide support to OSD and other organizations with these processes • Provide external liaison for IT Business Acquisition • Provide Acquisition Oversight for Business Systems and IT Acquisition Reform • Ensure adherence to the DoD Business Program Development and Implementation "Model-Data-Implement" strategy and oversee the development of the BEA, as well as the development and testing of tools and methods to build, analyze and execute the BEA throughout the Business Mission Area. • Using BEA to guide and constrain investment in IT business systems to maintain fidelity of existing systems to work and to develop new capabilities through Proof of Delivery pilots (PoDs) that translate these results to executable Enterprise Transition Plans (ETP).			
Accomplishments/Planned Programs Subtotals	-	-	41.808

	FY 2010	FY 2011
Congressional Add: None ***FY 2010 Accomplishments:*** N/A ***FY 2011 Plans:*** N/A	-	-
Congressional Adds Subtotals	-	-

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605075D8Z: *DCMO Policy and Integration*	PROJECT 0001: *DCMO Policy and Integration*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Provide basic or applied research in the field of Data Base Development. SAIC shall provide support to the Chief Technology Officer (CTO), reporting to the Deputy Chief Management Officer (DCMO)	C/CPFF	SAIC:Pentagon, DC	-	-		3.729	Jan 2012	-		3.729	Continuing	Continuing	
Business Enterprise Priorities Advisory Services and Support	C/T&M	Binary Group Inc.:Pentagon, DC	-	-		1.845	May 2012	-		1.845	Continuing	Continuing	
End to End Transformation Advisory Services	C/T&M	EDC Consulting LLC:Pentagon, DC	-	-		2.273	May 2012	-		2.273	Continuing	Continuing	
Basic or applied research in the field of Data Base Development	C/CPFF	SAIC:Pentagon, DC	-	-		3.663	Mar 2012	-		3.663	Continuing	Continuing	
Integrated Management Information Environment (IMIE)	C/CPFF	SAIC:Pentagon, DC	-	-		7.089	Mar 2012	-		7.089	Continuing	Continuing	
Technical support services for the BTA's Business Enterprise Architecture (BEA) and Enterprise Transition Plan (ETP)	C/Various	SAIC:Pentagon, DC	-	-		6.876	Sep 2012	-		6.876	Continuing	Continuing	
Support the analysis, integration and consistency of the BEA ensuring that it continues to mature in its ability to guide and constrain IT business investments in support of the Warfighter. End-to-End	C/Various	Corbin Company / Booz Allen Hamilton / Logistics Management Institue:Pentagon, DC	-	-		1.703	Mar 2012	-		1.703	Continuing	Continuing	
		Subtotal	-	-		27.178		-		27.178			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605075D8Z: *DCMO Policy and Integration*	PROJECT 0001: *DCMO Policy and Integration*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DCMO Policy and Integration Civilian Labor and Travel Requirement	Allot	Deputy Cheif Management Officer Staff:Pentagon DC	-	-		14.630		-		14.630	Continuing	Continuing	
		Subtotal	-	-		14.630		-		14.630			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		41.808		-		41.808			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605075D8Z: *DCMO Policy and Integration*	PROJECT 0001: *DCMO Policy and Integration*

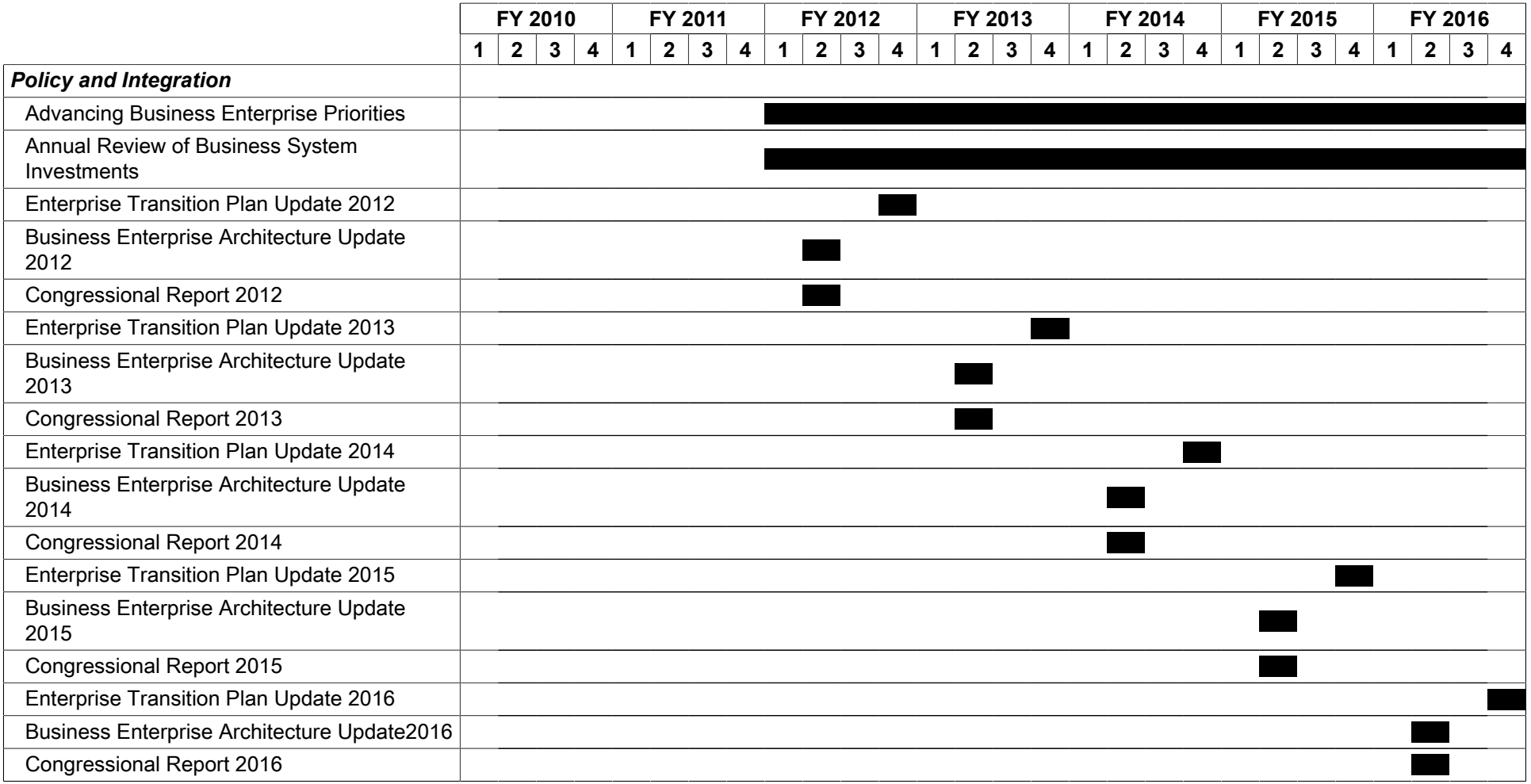

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605075D8Z: *DCMO Policy and Integration*	**PROJECT** 0001: *DCMO Policy and Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Policy and Integration				
Advancing Business Enterprise Priorities	1	2012	4	2016
Annual Review of Business System Investments	1	2012	4	2016
Enterprise Transition Plan Update 2012	4	2012	4	2012
Business Enterprise Architecture Update 2012	2	2012	2	2012
Congressional Report 2012	2	2012	2	2012
Enterprise Transition Plan Update 2013	4	2013	4	2013
Business Enterprise Architecture Update 2013	2	2013	2	2013
Congressional Report 2013	2	2013	2	2013
Enterprise Transition Plan Update 2014	4	2014	4	2014
Business Enterprise Architecture Update 2014	2	2014	2	2014
Congressional Report 2014	2	2014	2	2014
Enterprise Transition Plan Update 2015	4	2015	4	2015
Business Enterprise Architecture Update 2015	2	2015	2	2015
Congressional Report 2015	2	2015	2	2015
Enterprise Transition Plan Update 2016	4	2016	4	2016
Business Enterprise Architecture Update2016	2	2016	2	2016
Congressional Report 2016	2	2016	2	2016

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0605140D8Z: *Trusted Foundry*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	53.014	35.512	-	-	-	-	-	-	-	Continuing	Continuing
Trusted Foundry: *P014*	53.014	35.512	-	-	-	-	-	-	-	Continuing	Continuing

Note

The Trusted Foundry PE 0605140D8Z transfers to the Defense Logistics Agency in FY 2012.

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) and National Security Agency (NSA) require uninterrupted access to state-of-the-art design and manufacturing processes to produce custom integrated circuits designed specifically for military purposes. In accordance with DoD Instruction 5200.39, integrated circuits in critical/essential systems need to be procured from trusted sources in order to avoid counterfeit, tampered, or sabotaged parts. Worldwide competition from foreign state-subsidized manufacturing facilities (foundries) is making fabless semiconductor companies the norm in the United States. Sophisticated off-shore design and manufacturing facilities with engineering labor rates vastly less than U.S. engineering rates have resulted in outsourcing of electronics components and integrated circuits. These trends threaten the integrity and worldwide leadership of the U.S. semiconductor industry by eliminating many domestic on-shore suppliers and reducing access to trusted fabrication sources for advanced technology. These trends are of acute concern to the defense and intelligence community. Secure communications and cryptographic applications depend heavily upon high performance semiconductors where a generation of improvement can translate into a significant force multiplier and capability advantage. Important defense technology investments and demonstrations carry size, weight, power, and performance goals that can only be met through the use of the most sophisticated semiconductors.

The Trusted Foundry program provides DoD and NSA with trusted state-of-the-art microelectronics design and manufacturing capabilities necessary to meet the performance and delivery needs of their customers. The program will also provide the Services with a competitive cadre of trusted suppliers that will meet the needs of their mission critical/essential systems for trusted integrated circuit components. NSA, in their role as the Trusted Access Program Office, has successfully looked to commercial sources to satisfy their requirements. Access to trusted suppliers is imperative to ongoing and future DoD/NSA systems, and most centrally, Trusted Foundry access is absolutely necessary to meet secure communication and cryptographic needs for state-of-the-art semiconductor technologies.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605140D8Z: *Trusted Foundry*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	50.808	35.512	35.539	-	35.539
Current President's Budget	53.014	35.512	-	-	-
Total Adjustments	2.206	-	-35.539	-	-35.539
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	3.500	-			
• SBIR/STTR Transfer	-1.232	-			
• Other Program Adjustments	-0.062	-	-35.539	-	-35.539

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: Trusted Foundry: *P014*		
Congressional Add: *Trusted Foundry*	10.000	-
Congressional Add Subtotals for Project: Trusted Foundry	10.000	-
Congressional Add Totals for all Projects	10.000	-

Change Summary Explanation

The Trusted Foundry PE 0605140D8Z transfers to the Defense Logistics Agency in FY 2012.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605140D8Z: *Trusted Foundry*	PROJECT Trusted Foundry: *P014*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Trusted Foundry: *P014*	53.014	35.512	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) and National Security Agency (NSA) require uninterrupted access to state-of-the-art design and manufacturing processes to produce custom integrated circuits designed specifically for military purposes. In accordance with DoD Instruction 5200.39, integrated circuits in critical/essential systems need to be procured from trusted sources in order to avoid counterfeit, tampered, or sabotaged parts. Worldwide competition from foreign state-subsidized manufacturing facilities (foundries) is making fabless semiconductor companies the norm in the United States. Sophisticated off-shore design and manufacturing facilities with engineering labor rates vastly less than U.S. engineering rates have resulted in outsourcing of electronics components and integrated circuits. These trends threaten the integrity and worldwide leadership of the U.S. semiconductor industry by eliminating many domestic on-shore suppliers and reducing access to trusted fabrication sources for advanced technology. These trends are of acute concern to the defense and intelligence community. Secure communications and cryptographic applications depend heavily upon high performance semiconductors where a generation of improvement can translate into a significant force multiplier and capability advantage. Important defense technology investments and demonstrations carry size, weight, power, and performance goals that can only be met through the use of the most sophisticated semiconductors.

The Trusted Foundry program provides DoD and NSA with trusted state-of-the-art microelectronics design and manufacturing capabilities necessary to meet the performance and delivery needs of their customers. The program will also provide the Services with a competitive cadre of trusted suppliers that will meet the needs of their mission critical/essential systems for trusted integrated circuit components. NSA, in their role as the Trusted Access Program Office, has successfully looked to commercial sources to satisfy their requirements. Access to trusted suppliers is imperative to ongoing and future DoD/NSA systems, and most centrally, Trusted Foundry access is absolutely necessary to meet secure communication and cryptographic needs for state-of-the-art semiconductor technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Trusted Foundry	43.014	35.512	-
FY 2010 Accomplishments: Additional integrated circuits were provided to the U.S. Army, Navy, Air Force, and Defense Advanced Research Projects Agency to satisfy new and on-going program requirements. Application-Specific Integrated Circuit design efforts were initiated and completed to include leading-edge designs in state-of-the-art process technologies for military applications and the trusted design flow was enhanced for defense designers. New circuit cores were converted to trusted format across the full military specification environment and made available to the Trusted Foundry customers (programs, contractors, etc.). New equipment paradigms for trusted leading-edge process technologies for low volume and secure manufacturing, including chemical vapor deposition techniques were enhanced. New process paradigms at 32/22nm for trusted fabrication technologies were evaluated for implementation. The first multi-project wafer run at the 32nm node was initiated. New commercial and non-commercial			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605140D8Z: *Trusted Foundry*	PROJECT Trusted Foundry: *P014*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
sources and methodologies for trusted components and services within the complete supply chain were accredited and are now available to the defense community. ***FY 2011 Plans:*** Establish a cadre of trusted suppliers for the critical trusted components and services needed for appropriate Defense systems. Enhance Trusted Foundry products to include key specialty processes requested by DoD programs, such as high voltage, extreme environments, and embedded non-volatile memory. Enhance trusted design activities to encompass new processing capabilities. Establish a line of trusted catalog components that can be purchased by Defense contractors.			
Accomplishments/Planned Programs Subtotals	43.014	35.512	-

	FY 2010	FY 2011
Congressional Add: Trusted Foundry	10.000	-
FY 2010 Accomplishments: Began the process to enable a new advanced process node in the Trusted Foundry. Completed baseline experiments for determining scalability of extrinsic base process for high performance hetero-junction bipolar transistor (HBT) and ability to implement self-aligned features in a new device structure. First pass design of advanced test chip for merged bipolar/complementary metal-oxide-semiconductor process. Developed prototype simulation kit for evaluation of preliminary physical experiments.		
Congressional Adds Subtotals	10.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

NSA has negotiated a "commercial" capacity type IDIQ contract with IBM with 10 one-year options. IBM will provide custom and semi-custom integrated circuit parts in production and prototype quantities to meet DoD/NSA leading-edge integrated circuit needs. Additional suppliers of leading-edge production processes will be developed and accredited as Trusted Suppliers by the DMEA. This will provide program managers the flexibility to acquire trusted parts appropriate to the minimum risk and vulnerability of their particular system needs. Process IP will be obtained from trusted suppliers to assure the availability of parts over the long term.

E. Performance Metrics

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605140D8Z: *Trusted Foundry*	PROJECT Trusted Foundry: *P014*

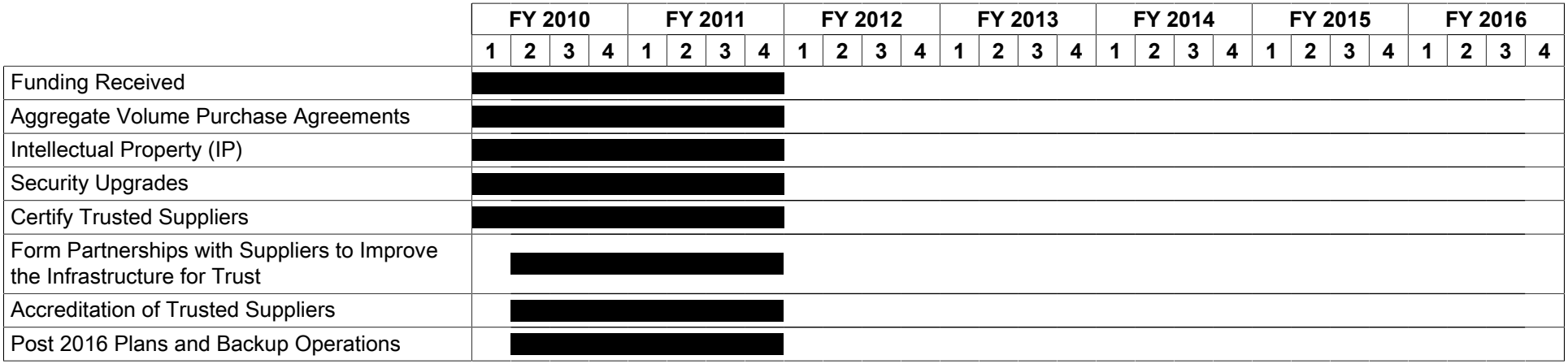

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605140D8Z: *Trusted Foundry*	**PROJECT** Trusted Foundry: *P014*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Funding Received	1	2010	4	2011
Aggregate Volume Purchase Agreements	1	2010	4	2011
Intellectual Property (IP)	1	2010	4	2011
Security Upgrades	1	2010	4	2011
Certify Trusted Suppliers	1	2010	4	2011
Form Partnerships with Suppliers to Improve the Infrastructure for Trust	2	2010	4	2011
Accreditation of Trusted Suppliers	2	2010	4	2011
Post 2016 Plans and Backup Operations	2	2010	4	2011

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605210D8Z: *Defense-Wide Electronic Procurement Capabilities*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	-	14.950	-	14.950	13.322	12.263	11.662	11.944	Continuing	Continuing
P*021: *Defense-Wide Electronic Procurement Capabilities-Contingency*	-	-	10.131	-	10.131	10.394	9.327	9.695	9.975	Continuing	Continuing
P*022: *SPOT -ES Contingency*	-	-	4.819	-	4.819	2.928	2.936	1.967	1.969	Continuing	Continuing

A. Mission Description and Budget Item Justification

Defense-wide Electronic Procurement Capabilities is designed to provide an avenue for the development of increased ebusiness capabilities critical to meet the enterprise-wide needs of the procurement community. The requirement for increased ebusiness capabilities may result from statute, regulation or internal control requirements. This program provides opportunities for the introduction of innovative, time-saving, and cost-saving technologies into procurement processes across the Department. This RDT&E PE provides resources to conduct software development and testing on new or modified ebusiness applications to ensure mature system development, integration and demonstration of production representative systems and capabilities.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	14.950	-	14.950
Total Adjustments	-	-	14.950	-	14.950
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense-wide Electronic Procurement Capabilities - New Start	-	-	6.600	-	6.600
• Special Applications for Contingencies	-	-	8.900	-	8.900
• Defense Efficiencies - Reports, Studies, Borads and Commissions	-	-	-0.389	-	-0.389
• Economic Assumptions	-	-	-0.022	-	-0.022
• Other Program Adjustments	-	-	-0.139	-	-0.139

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605210D8Z: *Defense-Wide Electronic Procurement Capabilities*	PROJECT P*021: *Defense-Wide Electronic Procurement Capabilities- Contingency*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P*021: *Defense-Wide Electronic Procurement Capabilities-Contingency*	-	-	10.131	-	10.131	10.394	9.327	9.695	9.975	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Defense-wide Electronic Procurement Capabilities is designed to provide an avenue for the development of increased ebusiness capabilities critical to meet the enterprise-wide needs of the procurement community. The requirement for increased ebusiness capabilities may result from statute, regulation or internal control requirements. This program provides opportunities for the introduction of innovative, time-saving, and cost-saving technologies into procurement processes across the Department. This RDT&E PE provides resources to conduct software development and testing on new or modified ebusiness applications to ensure mature system development, integration and demonstration of production representative systems and capabilities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Defense-Wide Electronic Procurement Capabilities- Contingency	-	-	10.131
FY 2010 Accomplishments: N/A			
FY 2012 Plans: Funding will be used to develop an end to end paperless reconciliation process for Government Furnished Property (GFP); develop a data standard for warranty information; ensure that contract systems are modified to send data to personnel and readiness systems to account for logical and physical access to DoD systems; and to fully implement a fraud and misuse data mining detection capability for purchase cards in DoD. These funds will also support development of contingency contracting and financial management business tools for the warfighter that are currently in an immature development stage, or do not exist.			
Accomplishments/Planned Programs Subtotals	-	-	10.131

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

NA

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605210D8Z: *Defense-Wide Electronic Procurement Capabilities*	PROJECT P*022: *SPOT -ES Contingency*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P*022: *SPOT -ES Contingency*	-	-	4.819	-	4.819	2.928	2.936	1.967	1.969	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Synchronized Pre-Deployment and Operational Tracker - Enterprise Suite (SPOT-ES) is the joint enterprise suite of products employed for the management, tracking and visibility of contracted capability and contractors authorized to accompany U.S. forces in support of domestic and overseas contingency operations (OCO).

SPOT ES assists the Combatant Commander (CCDR) in maintaining awareness of the nature, extent, and potential risks and capabilities associated with the contracted support in contingency, humanitarian or peacekeeping operations, or military exercises designated by the CCDR. As such, SPOT ES:

. Serves as the central repository for up-to-date status and reporting on contingency contractor personnel.

. Provides by-name accountability of DoD-funded contingency contractor personnel and other personnel as directed by Public Law, USD (AT&L) or by the CCDR.

. Tracks contract capability information for all DoD-funded contracts supporting contingencies or designated military exercises.

. Contains contract information necessary to establish and maintain accountability and visibility of contractors and contract capabilities for operational contract support.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: SPOT -ES Contingency	-	-	4.819
FY 2010 Accomplishments: N/A			
FY 2011 Plans: N/A			
FY 2012 Plans: Provide logistics support in accordance with the warfighter's requirements - the right materiel delivered when and where needed to meet warfighter needs by integrating Operational Contractor Support (OCS) into the planning process. A chieve full accountability and visibility of contractors supporting contingency operations - account for and track all contractor personnel during their full in-theater term of service.			
Accomplishments/Planned Programs Subtotals	-	-	4.819

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605210D8Z: *Defense-Wide Electronic Procurement Capabilities*	**PROJECT** P*022: *SPOT -ES Contingency*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0605648D8Z: *Defense Acquisiton Executive (DAE)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	4.128	-	-	-	-	-	-	-	-	Continuing	Continuing
P650: *Defense Acquisition Executive*	4.128	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY 2011, funding is transferred from the Joint Capability Technology Demonstration (JCTD) BA 5 Defense Acquisition Executive (DAE) Pilot program into the JCTD BA 3 PE. The DAE BA 5 Pilot program program element (PE) ends.

Today's operations require even faster delivery of new capabilities. Therefore, the JCTD Program was revised in FY 2010 to accelerate project selection, capability demonstration of more short projects (one year or less) and fewer long projects (two to three years), and delivery rate of new capabilities. This new process includes: improved synchronization with Combatant Commands (COCOM) experimentation; streamlined project approval and initiation; clear 1-year deliverables and decision points for projects greater than a year in duration; and annual reviews of ongoing JCTDs to assess deliverables and continuation of the project.

A. Mission Description and Budget Item Justification

The purpose of the DAE Pilot Program was to:
- Provide horizontal integration of operationally-mature technologies supporting the COCOMs and provide initial sustainment into the joint force, until a Service or Defense Agency is able to maintain sustainment via an established Program of Record.
- Use Defense-Wide PEs in Research, Development, Test and Evaluation (RDT&E) Budget Activity 5 for System Development and Demonstration and Major Equipment, Procurement funds (PE 0902198D8Z) for initial acquisition of equipment.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	4.232	-	-	-	-
Current President's Budget	4.128	-	-	-	-
Total Adjustments	-0.104	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.098	-			
• Other Program Adjustments	-0.006	-	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605648D8Z: *Defense Acquisiton Executive (DAE)*

Change Summary Explanation

In FY 2011, the DAE Pilot program funding will be transferred to the JCTD BA3 PE 0603648D8Z.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605648D8Z: *Defense Acquisiton Executive (DAE)*	PROJECT P650: *Defense Acquisition Executive*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P650: *Defense Acquisition Executive*	4.128	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

Note

In FY 2011, funding is transferred from the Defense Aquisition Executive (DAE) Pilot program into the JCTD BA 3 program element (PE). The JCTD DAE BA 5 Pilot program PE ends.

Today's operations require even faster delivery of new capabilities. Therefore, the JCTD Program was revised in FY 2010 to accelerate project selection, capability demonstration of more short projects (one year or less) and fewer long projects (two to three years), and delivery rate of new capabilities. This new process includes: improved synchronization with Combatant Command (COCOM) experimentation; streamlined project approval and initiation; clear 1-year deliverables and decision points for projects greater than a year in duration; and annual reviews of ongoing JCTDs to assess deliverables and continuation of the project.

A. Mission Description and Budget Item Justification

The purpose of the Defense Acquisition Executive (DAE) Pilot Program is to:
- Provide horizontal integration of operationally mature technologies supporting the COCOMs and provide initial sustainment into the joint force, until a Service or Defense Agency is able to maintain sustainment via an established Program of Record.
- Use Defense-Wide PEs in Research, Development, Test and Evaluation (RDT&E) Budget Activity 5 for System Development and Demonstration and Major Equipment, Procurement funds (0902198D8Z) for initial acquisition of equipment.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Agile Transportation for the 21st Century (AT21)	4.128	-	-
Description: AT21 is implementing standardized, repeatable business processes for transportation planning and transportation management with supporting information technology solutions at U.S. Transportation Command (USTRANSCOM) that have been identified for sustainment and transition to a new joint Program of Record via the DAE Pilot. The Commander, USTRANSCOM, as Distribution Process Owner, is responsible for the Defense Transportation System (DTS), which executes via a myriad of stove piped processes for managing movement requirements, lift asset availability, and execution planning. The AT21 Advanced Concept Technology Demonstration (ACTD) successfully demonstrated the use of commercial-off-the-shelf (COTS) technologies that automate and streamline business processes and demonstrate commercial best practices for transportation management. AT21 provides continuous visibility, collaboration, automated processes, and alerts supporting transportation planning. When fully transitioned, AT21 will provide opportunities to streamline cargo movement by optimizing capacity throughout			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605648D8Z: *Defense Acquisiton Executive (DAE)*	PROJECT P650: *Defense Acquisition Executive*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

the distribution network. AT21's Turbo Planner tool reduces administrative time in developing, reviewing, and adjudicating adaptive plans and crisis orders for the Joint Operation Planning and Execution System. USTRANSCOM transitioned the ACTD collaborative Time-Phases Force Development Database (TPFDD) planning tool, TransViz and initiated AT21 as a new program acquisition. TransViz subsequently transitioned to Global Command and Control System - Joint (GCCS-J). The TransViz collaboration functionality is in use by USTRANSCOM Deployment and Distribution Operations Center. TransViz is used by the USTRANSCOM and will be included in the Adaptive Planning and Execution environment. USTRANSCOM has conducted an acquisition for business process improvement and COTS configuration to provide transportation business process management using supporting COTS in FY10 – FY12 and awarded the contract 4 March 2010. Program planning is underway to begin strategic transportation scheduling/optimization and theater capability development efforts in FY11.

FY 2010 Accomplishments:

AT21 provided initial capability in support of strategic-level deployment and Special Assignment Airlift Mission (SAAM) planning for the Warfighter. The DAE Pilot funded the AT21 Enterprise Integration Laboratory (EIL), which ensured the AT21 and associated enterprise (e.g., portal) capability is fully integrated functionally with the Joint Deployment Distribution Enterprise (JDDE), and technically, with the net-centric enterprise architecture. The AT21 EIL provided a development, analysis and operational evaluation environment in which users and technical assessment personnel conduct business process improvement sessions, develop services and visualization products; and evaluated AT21 capability development components in parallel with time-consuming certification and accreditation activities. The AT21 EIL allowed the government to conduct and simulate real-world operations in as close to an operational setting as practicable to enable data, interface, technology installation, test, and evaluation activities to occur in a lower-risk setting and in parallel with user evaluation(s), thus reducing the time necessary to deploy the operational capability. Engineering support is configured and implemented the technical environment required for users to operationally evaluate and engineers and certification and accreditation activities to incrementally test software releases for web-Methods business process management capability and the associated data services and portlets being rendered in the government's Distribute.mil portal. Specifically, the engineering team is: facilitated and coordinated ongoing JDDE/command initiatives being conducted by USTRANSCOM and their Component Commands, Defense Logistics Agency (DLA), Air Force Research Lab (AFRL), and supporting organizations to understand test objectives; developed technical specifications for hardware/software procurement in partnership with TCJ6 engineers for low and high-side configuration. These funds procured specified hardware/software, to include: Office Automation Software; Server/Storage Hardware; BPM Software; Information Assurance Configurations; and a full suite of integration environment capabilities to enable production and pre-production integration. Funds also procured space for Servers in Demilitarized Zone (DMZ) Install hardware/software and testing of connectivity for the user community. These funds acquired a cadre of highly trained and skilled functional and technical analysts who are conducting all activities in the AT21 EIL; and are following Industry best practice standards such as Lean/ Six Sigma process design and cutting-edge DoD Architecture Framework implementations that are setting the standards for

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605648D8Z: *Defense Acquisiton Executive (DAE)*	PROJECT P650: *Defense Acquisition Executive*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
DoD. These funds provided for the development of test plans and schedules; supported evaluation of prototypes in an AT21 EIL environment by evaluating "goodness," suitability, and relevance to task/mission; provided training to government evaluators; provided technical support for the AT21 EIL environment; and utilized representative data to assess applicability to the JDDE. The developers documented findings in a technical assessment report, and documented technical lessons learned.			
Accomplishments/Planned Programs Subtotals	4.128	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0902198D8Z: *JCTD Procurement*	1.938	1.920	1.940		1.940	1.964	1.999	2.035		Continuing	Continuing

D. Acquisition Strategy

The DAE Pilot reviewed and selected the most promising "joint unique" JCTDs that did not neatly fit under a Service area of responsibility and provided resources to enable the smooth transition of a critical capability to the warfighter. The DAE pilot program aimed to continue a logical progression of program phases and development in order to be suitable for full production and deployment to the warfighter. The DAE Pilot was part of the JCTD model established in the FY 2006 President's Budget. Only the JCTDs that demonstrated the highest military utility and "operational like" maturity were considered for the transition funding in the DAE BA5 PE. The DAE Pilot Program in FY 2010 supported Agile Transportation 21 (AT21). AT21 is an operational logistics system at USTRANSCOM that was identified for sustainment and transition to a new joint Program of Record via the DAE Pilot.

E. Performance Metrics

I. AT-21 System Integration Lab Configuration

Provide engineering support to configure and implement the technical environment required to incrementally test software releases for COTS business process management capability. Specifically, the engineering team will:

1.1. Facilitate and coordinate with ongoing command initiatives being conducted by USTRANSCOM and their Component Commands, and supporting contractors to understand test objectives.

1.2. Develop technical specifications for hardware/software procurement in partnership with TCJ6 engineers for low and high-side configuration. Once approved by the government, procure specified hardware/software.

1.2.1 Office Automation Software

1.2.2 Server/Storage Hardware

1.2.3 BPM Software

1.2.4 Guard Configuration

1.3. Identify initial test data requirements / system feeds in partnership with TCJ6 engineers. Configured lab environment approved by TCJ6 and ready to conduct functional / technical testing.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605648D8Z: *Defense Acquisiton Executive (DAE)*	PROJECT P650: *Defense Acquisition Executive*

II. System Integration Lab Installation
2.1. Procure Space for Servers in Demilitarized Zone (DMZ)
2.1. Install hardware/software identified in 1.2.
2.2. Test connectivity for user community
User Community will have access to BPM Software Suite

III. Establish Data Feeds
3.1 Receive data sets from the IDE environment for inclusion in the Test Vignettes
3.1.1 Receive IGC Data
3.1.2 Receive Additional SMS data
3.1.3 Receive CAMPS Data
Automated Daily Data Feed Received

IV. Test Vignettes
4.1. Develop test plans and schedules.
4.2. Support evaluation of the prototypes in a “lab” environment by evaluating "goodness," suitability, and relevance to task/mission; provide training to government evaluators; provide technical support for the lab environment; and utilize representative data to assess applicability to the JDDE. Document findings in a technical assessment report.
4.3. Document technical lessons learned. Technical documentation for each test cycle, per the test schedule.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605648D8Z: *Defense Acquisiton Executive (DAE)*	PROJECT P650: *Defense Acquisition Executive*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Integration Laboratory	TBD	USTRANSCOM:Scott AFB	2.000	-		-		-		-	Continuing	Continuing	
		Subtotal	2.000	-		-		-		-			

Remarks

Transportation Component Commands, and supporting organizations to understand test objectives; develop technical specifications for hardware/software procurement in partnership with TCJ6 engineers for low and high-side; configuration. Once approved by the government, procure specified hardware/software; Office Automation Software; Server/Storage Hardware; BPM Software; Guard Configuration.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	TBD	USTRANSCOM:Scott AFB	2.128	-		-		-		-	Continuing	Continuing	
		Subtotal	2.128	-		-		-		-			

Remarks

Provide engineering support to configure and implement the technical environment required to incrementally test software releases for COTS business process management capability. Specifically, the engineering team will facilitate and coordinate with ongoing JDDE/command initiatives being conducted by USTRANSCOM and supporting organizations.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605648D8Z: *Defense Acquisiton Executive (DAE)*	PROJECT P650: *Defense Acquisition Executive*	

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	4.128	-		-		-		-			

Remarks

AT21 System Integration Laboratory (SIL) will provide an experimentation and operational evaluation environment in which users and technical assessment personnel would explore AT21 capability development components in parallel with time-consuming certification and accreditation activities. The basis of the EIL is for the government to conduct and simulate real-world operations in as close to an operational setting as practicable to enable data, interface, technology installation, test, and evaluation activities to occur in a lower-risk setting and in parallel with user evaluation(s) thus reducing the time necessary to deploy the operational capability.

Funds will provide engineering support to configure and implement the technical environment required to incrementally test software releases for COTS business process management capability. Specifically, the engineering team will facilitate and coordinate with ongoing JDDE/command initiatives being conducted by USTRANSCOM.

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605648D8Z: *Defense Acquisiton Executive (DAE)*	**PROJECT** P650: *Defense Acquisition Executive*

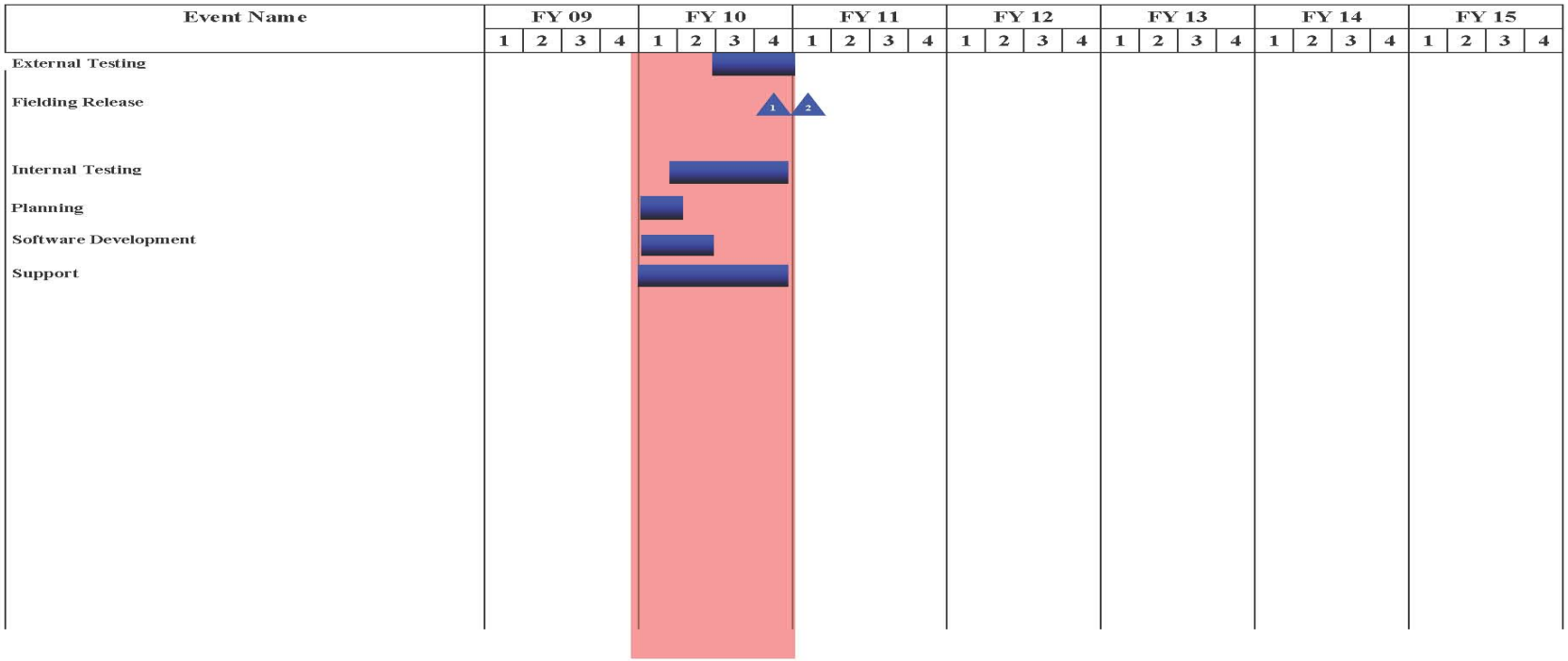

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605648D8Z: *Defense Acquisiton Executive (DAE)*	**PROJECT** P650: *Defense Acquisition Executive*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Planning	1	2010	1	2010
Software Development	1	2010	2	2010
Internal Testing	2	2010	4	2010
External Testing	3	2010	4	2010
Fielding Release	4	2010	4	2010
Support	1	2010	4	2010

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0807708D8Z: *Wounded, Ill and Injured Program*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	1.548	1.590	-	-	-	-	-	-	-	Continuing	Continuing
877: *Wounded, Ill and Injured Program*	1.548	1.590	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Care Management, Disability Evaluation, and Transition Systems IM/IT. Funding includes development of web-based tools for use in overseeing the Service member recovery and facilitating resolution of disability and transition processing issues. In FY 2008, the Departments of Defense and VA made significant progress leveraging the Veterans Tracking Application with access to existing Department of Defense Care Management (CM) tools and resources. The work continued through FY 2009 with a prototype dashboard that leverages existing case management tools and resources in a single sign on construct, and continued in FY 2010 to include further enhancements of the prototype and integration of care management models. The Department of Defense's request includes funding for development of content management systems.

Justification: Non-medical Care Managers are responsible for provide oversight of welfare and quality of life issues. They assist the service member and family in resolving problems involving financial, administrative, personnel, and other non-medical issues that may occur during the recovery, rehabilitation and reintegration phases across the continuum of care. Full funding will provide the capability for DoD Case Managers to view non-clinical data on a Wounded Warriors from one location. FY 2009 funding began the implementation of the July 2007 Dole-Shalala Recommendations and initial development of the 2008 NDAA required comprehensive policy. During FY 2010, the Recovery Care Plan systems solution was developed and underwent Government Acceptance Testing. RCP-SS systems deployments began in 3Q10 to selected field locations.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	1.609	1.590	-	-	-
Current President's Budget	1.548	1.590	-	-	-
Total Adjustments	-0.061	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-0.061	-	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0807708D8Z: *Wounded, Ill and Injured Program*

Change Summary Explanation

A functional transfer of the DoD Transition Assistance Program (TAP) from the Office of Military Community and Family Policy to the Office of Wounded Warrior Care and Transition Policy occured in March 2009, subsequent to approval of the Program Objective Memorandum for Fiscal Years 2010-2015 . During the Program Review for Fiscal Years 2011-2015, DoD TAP requirements were definitized and documented. Hence, these program changes reflect senior leadership's strategic vision for the Department's TAP to meet the intent of 10 USC § 1142, Pre-separation Counseling, with increased emphasis on delivery of services to the Reserve Components. The Department approved a technical correction to transfer DW, RDTE to DW, Procurement to procure scanning equipment for the DoD to reduce manual entry errors associated with Service member's Verification of Military Training and DD Form 214 pending implementation of electronic data interchange capability, anticipated to occur not later than end of FY 2011. This action does not change the purpose for which the funds were originally appropriated, nor does it generate additional requirements.

Wounded Warrior Care and Transition Policy – RDTE decrease $1,552 supports senior leadership strategic vision to meet the intent of 10 USC § 1142, Pre-Separation Counseling, under the Transition Assistance Program. Funds transfer to support the procurement of scanning equipment for the DoD to reduce manual entry errors associated with Service member's Verification of Military Training and DD Form 214 pending implementation of electronic data interchange capability. This action does not change the purpose for which the funds were originally appropriated, nor does it generate additional requirements. This action brings the Department into compliance with 10 USC § 1142.

PROC	Increase	3,986	3,087	1,651	1,721	1,542
O&M	decrease	(2,434)	(1,563)	(129)	(202)	(38)
RDTE	decrease	(1,552)	(1,524)	(1,522)	(1,519)	(1,504)
P&R Net Adjustment		0	0	0	0	0

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Care Management, Disability Evaluation, and Transition Systems IM/IT - Wounded, Ill, and Injured	1.548	1.590	-
Description: Funding facilitates the discovery, analysis, and integration of existing DoD and VA web-based tools, and the development of a single application that will be used across the agencies to oversee the Service member recovery and facilitating resolution of transition and disability processing issues. Non-Clinical Case Management Recovery Care Plan and Benefits Portal Development. Funding facilitates the research, analysis, and integration of existing DoD and VA web-based tools, and the development of a single application that will be used across the agencies to oversee the Service member recovery and facilitating resolution of transition process issues. This initiative provides public and secure web access to benefits and services supporting Wounded Warriors through a secure/interactive Web-based portal tailored to the needs of the Wounded Warrior, identifying both VA/DoD benefits and services important to a Wounded Warrior's recovery plan. The Portal customizes benefits information based upon user profiles to include display of benefits to support stage recovery and leverages existing VA/DoD business services/ systems to create "One Pathway" for the Wounded Warrior so that they may more actively participate in their clinical recovery plan, and interfaces with their Individual Recovery Plan. In FY 2008 the Department of Defense and Veteran Affairs (DoD/VA)			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0807708D8Z: *Wounded, Ill and Injured Program*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
established a Portal presence with links to MyHealthe-Vet, eLearning LMS, and pre-negotiated access for all members with the establishment of secure, single sign-on infrastructure. ***FY 2010 Accomplishments:*** Funding provided FY 2008 - FY 2010 established the capability across the Reserve Component to provide authorized Reserve Component medical personnel with the capability to read and document medical encounter information and order necessary medical tests, consults and procedures throughout a Service Member's continuum of care with AHLTA. Paid for acquisition of gateways, servers, associated licenses, testing, and implementation of remote access capability at Reserve Component treatment facilities. Funding also paid for development and Govt Acceptance Testing of a systems solution for the DoD Recovery Coordination Program. ***FY 2011 Plans:*** Funding pays for research of disability evaluation, benefits and entitlements, Wounded Warrior internet-based information resources, and transition processing systems across the services, and the development of a concept plan to implement the integration of those systems into an overarching integrated Wounded Warrior IM/IT architecture. Includes funding to build virtual platfroms for delivery of services to Reserve Component Service members, spouses, and other family members (caregivers). ***FY 2012 Plans:*** A functional transfer of the DoD Transition Assistance Program (TAP) from the Office of Military Community and Family Policy to the Office of Wounded Warrior Care and Transition Policy occurred in March 2009, subsequent to approval of the Program Objective Memorandum for Fiscal Years 2010-2015 . During the Program Review for Fiscal Years 2011-2015, DoD TAP requirements were definitized and documented. Hence, these program changes reflect senior leadership's strategic vision for the Department's TAP to meet the intent of 10 USC § 1142, Pre-separation Counseling, with increased emphasis on delivery of services to the Reserve Components. The Department approved a technical correction to transfer DW, RDTE to DW, Procurement to procure scanning equipment for the DoD to reduce manual entry errors associated with Service member's Verification of Military Training and DD Form 214 pending implementation of electronic data interchange capability, anticipated to occur not later than end of FY 2011. This action does not change the purpose for which the funds were originally appropriated, nor does it generate additional requirements.			
Accomplishments/Planned Programs Subtotals	1.548	1.590	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0807708D8Z: *Wounded, Ill and Injured Program*

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0807708D8Z: *Major Equip Procurement*	1.075	1.087	3.986	0.000	3.986	3.087	1.651	1.721	1.542	Continuing	Continuing
• 0902198D8Z: *Operation & Maintenance*	37.003	74.412	81.789	0.000	81.789	81.676	81.815	82.432	79.647	Continuing	Continuing

E. Acquisition Strategy

N/A

F. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604774D8Z: *Defense Readiness Reporting System (DRRS)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	14.838	5.113	6.658	-	6.658	6.325	6.329	6.358	6.294	Continuing	Continuing
774: *Defense Readiness Reporting System (DRRS)*	14.838	5.113	6.658	-	6.658	6.325	6.329	6.358	6.294	Continuing	Continuing

Note

Estimate for FY2012 was modified to reflect efficiencies and economic assumptions.

Defense Readiness Reporting System Efficiency Reductions - To be achieved through implementation of Government Accountability Office recommendations to staff the DRRS program office on the basis of human capital strategy that is grounded in an assessment of core competencies and essential knowledge, skills, and abilities needed to perform key DRRS program management functions, an inventory of the program office's existing workforce capabilities, and an analysis of the gap between the assessed needs and the existing capabilities. Also, DRRS Implementation Office will work with the Acquisition Component Executive to ensure all acquisition requirements are being met prior to any further certification requests.

The reductions that DRRS incurred were from SSC. It has limited the amount of contractors within the DRRS efforts.

A. Mission Description and Budget Item Justification

This funding supports Defense Planning Guidance (DPG) directing the Department of Defense (DoD) components to develop guidelines and procedures for a comprehensive readiness reporting system that evaluates readiness on the basis of the actual missions and capabilities assigned to the forces. The Defense Readiness Reporting System (DRRS) establishes a capabilities-based, adaptive, near real-time readiness information system for the DoD. This system is being designed to measure the readiness of military forces and supporting infrastructure to meet missions and goals assigned by the Secretary of Defense. DRRS also hosts information and applications used to support Joint Forces Command (JFCOM), Transportation Command (TRANSCOM), Special Operations Command (SOCOM) and Strategic Command (STRATCOM) in their roles as the Joint Force Providers.

The transformation of readiness reporting into a new comprehensive readiness system presents a number of significant challenges. First, there are thousands of new potential
reporting entities to include in DRRS, such as Combatant Commands, Joint Task Forces, Services, Active and Reserve component units, installations, depots, ports, and major
elements of the industrial base. These entities must not only define and implement reporting based on specific readiness metrics, but they must make their readiness status
continuously available in near real time to DRRS. Second, the current National Military Strategy (NMS) makes substantially more complex demands on readiness reporting.
Instead of basing readiness on traditional MTW-based scenarios, the NMS asks us to contemplate readiness for an entire range of operational forms, and to design DRRS to assess global readiness impact based on our integrated ability to project and sustain a mix of constructed forces in simultaneous engagements. Finally,

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0604774D8Z: *Defense Readiness Reporting System (DRRS)*

Operation Iraqi Freedom and Operation Enduring Freedom sourcing challenges mean that force managers need applications that will query the entire Department for suitable, available organizations to meet current needs. The need for these applications and the underlying data are a top priority for the DRRS project.

The realization of DRRS requires integrating a host of key technologies in order to achieve an information system that supports distributed, collaborative, and dynamic readiness
reporting in addition to continuous tool-based assessment. The primary technical goal is the creation of a highly reliable and securely integrated readiness data environment to
leverage and extend current readiness information systems. This system is based on intelligent agents, dynamic databases, semantic middleware, and publish/subscribe concepts;
providing a logically uniform view into the multiple databases and information sources that feed DRRS. Crucially, through this type of advanced information environment, we
dramatically expand the range of readiness queries that DRRS can be able to handle. This environment supports a suite of analysis tools that allow users to explore the consequences of readiness deficiencies in terms of the ability to generate forces and assess transportation feasibility as it pertains to specific scenarios. These tools and tool suites
harness the power of the information environment to make possible the kind of quick-turnaround, excursion-driven readiness assessment that is at the heart of DRRS.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	13.121	5.113	6.825	-	6.825
Current President's Budget	14.838	5.113	6.658	-	6.658
Total Adjustments	1.717	-	-0.167	-	-0.167
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	1.717	-			
• Other Program Adjustments	-	-	-0.124	-	-0.124
• DoD service Support Contract Efficiency	-	-	-0.043	-	-0.043

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: 774: *Defense Readiness Reporting System (DRRS)*		
Congressional Add: *DRRS*	1.718	-
Congressional Add Subtotals for Project: 774	1.718	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0604774D8Z: *Defense Readiness Reporting System (DRRS)*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Congressional Add Totals for all Projects	1.718	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604774D8Z: *Defense Readiness Reporting System (DRRS)*	PROJECT 774: *Defense Readiness Reporting System (DRRS)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
774: *Defense Readiness Reporting System (DRRS)*	14.838	5.113	6.658	-	6.658	6.325	6.329	6.358	6.294	Continuing	Continuing
Quantity of RDT&E Articles											

Note

Economic adjustment changes for FY2012 thru FY2016

Defense Readiness Reporting System Efficiency Reductions - To be achieved through implementation of Government Accountability Office recommendations to staff the DRRS program office on the basis of human capital strategy that is grounded in an assessment of core competencies and essential knowledge, skills, and abilities needed to perform key DRRS program management functions, an inventory of the program office's existing workforce capabilities, and an analysis of the gap between the assessed needs and the existing capabilities. Also, DRRS Implementation Office will work with the Acquisition Component Executive to ensure all acquisition requirements are being met prior to any further certification requests.

A. Mission Description and Budget Item Justification

This funding supports Defense Planning Guidance (DPG) directing the Department of Defense (DoD) components to develop guidelines and procedures for a comprehensive readiness reporting system that evaluates readiness on the basis of the actual missions and capabilities assigned to the forces. The Defense Readiness Reporting System (DRRS) establishes a capabilities-based, adaptive, near real-time readiness information system for the DoD. This system is being designed to measure the readiness of military forces and supporting infrastructure to meet missions and goals assigned by the Secretary of Defense. DRRS also hosts information and applications used to support Joint Forces Command (JFCOM), Transportation Command (TRANSCOM), Special Operations Command (SOCOM) and Strategic Command (STRATCOM) in their roles as the Joint Force Providers.

The transformation of readiness reporting into a new comprehensive readiness system presents a number of significant challenges. First, there are thousands of new potential reporting entities to include in DRRS, such as Active and Reserve component units, agencies, Combatant Commanders, installations, depots, ports, and major elements of the industrial base. These new entities must not only define and implement reporting based on specific readiness metrics, but they must make their readiness status continuously available in near real time to DRRS. Second, the current National Military Strategy makes substantially more complex demands on readiness reporting. Instead of basing readiness on traditional MTW-based scenarios, the NMS asks us to contemplate readiness for an entire range of operational forms, and to design DRRS to assess global readiness impact based on our integrated ability to project and sustain a mix of constructed forces in simultaneous engagements. Finally, OIF/OEF sourcing challenges mean that force managers need applications that will query the entire Department for suitable, available organizations to meet current needs. The need for these applications and the underlying data are a top priority for the DRRS project.

The realization of DRRS will require integrating a host of key technologies in order to achieve an information system that will support massive-scale distributed, collaborative dynamic readiness reporting and continuous tool-based assessment. The primary technical goal is the creation of a high-reliability, secure integrated readiness data environment that will leverage and extend current readiness information systems. This system will be based on intelligent agents, dynamic databases,

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604774D8Z: *Defense Readiness Reporting System (DRRS)*	PROJECT 774: *Defense Readiness Reporting System (DRRS)*

semantic middleware, and publish/subscribe concepts; and will provide a logically uniform view into the multiple databases and information sources that will feed DRRS. Crucially, through this type of advanced information environment, we will dramatically expand the range of readiness queries that DRRS will be able to handle. Coupled to this data environment will be a set of high-speed scenario-oriented tools that support ad hoc queries and drilldown, and an advanced workflow system that can assemble existing and new scenario and assessment tools into high-level task-specific query processes. These tools and tool suites will harness the power of the information environment to make possible the kind of quickturnaround, excursion-driven readiness assessment that is at the heart of DRRS.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: 774 Defense Readiness Reporting System	13.120	5.113	6.658

Description: . DRRS is the primary means by which Defense components -- Combatant Commands, Services, Agencies and their subordinate elements and units -- report their readiness. The system measures readiness of the Department's components to execute the full range of missions assigned by the Secretary of Defense.

The Defense Readiness Reporting System (DRRS) establishes a capabilities-based, adaptive, near real-time readiness information system for DoD. DRRS measures the readiness of military forces and supporting infrastructure to meet missions and goals assigned by the Secretary of Defense. The realization of DRRS required integrating a host of key technologies to achieve an information system that supports distributed, collaborative, and dynamic readiness reporting in addition to continuous tool-based assessment. The primary technical goal was the creation of a highly reliable and securely integrated readiness data environment to leverage and extend current readiness information systems. DRRS contains readiness metrics and supporting data for forces and support organizations.

FY 2010 Accomplishments:
- Continue development and fielding of the Global Visibility Tool to support GFM
- Continue Software lifecycle support
- Continue refinement of data architecture
- Data quality improvement
- Data latency improvement
- Continue development and integration with Interagency readiness and preparedness systems outside DoD.
- Expand readiness reporting capability and integration with coalition forces and allies

FY 2011 Plans:
- Continue Software lifecycle support
- Continue refinement of data architecture
- Data quality improvement
- Data latency improvement
- Continue development and integration with Interagency readiness and preparedness systems outside DoD.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604774D8Z: *Defense Readiness Reporting System (DRRS)*	PROJECT 774: *Defense Readiness Reporting System (DRRS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Expand readiness reporting capability and integration with coalition forces and allies ***FY 2012 Plans:*** • Validation of Org Server • Data quality improvement • Data latency improvement • Continue development and integration with Interagency readiness and preparedness systems outside DoD. • Completion of SORTS transition to DRRS * Integration of Language Readiness Index into DRRS			
Accomplishments/Planned Programs Subtotals	13.120	5.113	6.658

	FY 2010	FY 2011
Congressional Add: DRRS ***FY 2010 Accomplishments:*** Additional funding will allow for expert readiness data specialists to create an analytical structure to exploit the data being made available by DRRS.	1.718	-
Congressional Adds Subtotals	1.718	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

- Ability of Combatant Commands to assess current operations and war plans based on actual forces that would be assigned
- Mapping of Joint Capability Areas (JCAs) to joint services and agency tasks to usable total force and mission capability assessments
- Complete the integration of active Guard and Reserve
- Expanding readiness assessments to all DoD organizations, including installations and facilities
- Transition to one readiness reporting system for DoD.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0604875D8Z: *Joint Systems Architecture Development*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	12.089	8.052	4.731	-	4.731	3.876	4.133	4.375	5.961	Continuing	Continuing
P875: *Joint Systems Architecture Development*	5.683	-	-	-	-	-	-	-	-	Continuing	Continuing
P876: *Portfolio Systems Acquisition (PSA)*	6.406	8.052	4.731	-	4.731	3.876	4.133	4.375	5.961	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Quadrennial Defense Review (QDR) and acquisition reform initiatives call for top down, national security strategy-driven capabilities-based planning. Department of Defense (DoD) Instruction 5000.02 and Chairman of the Joint Chiefs of Staff Instruction 3170.01 promulgate capabilities-based requirements and acquisition processes. The Joint System Architecture Development (JSAD) program enables collaborative efforts to achieve these goals. These efforts include providing support to conduct warfighting capability-based analysis; performing assessments of joint capability areas and joint integrating concepts; developing and supporting needed sets of system and system-related data; creating integrated roadmaps to support acquisition investment decisions; and performing assessments of major defense acquisition programs and major automated information systems in a capability area context. Activities in the JSAD project are divided into three areas: (1) capability-based analysis; (2) roadmaps; and (3) support tools and guidance. Capability-based analysis provides analysis of the different technology, functionality, and integration impacts of systems on warfighting capability. Acquisition roadmaps guide systems development and associated investment plans. JSAD support tools and guidance initiatives develop systems data, and tools, exploit modeling and simulation and architecture efforts to improve DoDs overall assessment capability. These efforts guide the development and improve the testing and fielding of integrated systems of systems in order to achieve Joint mission capabilities. The QDR also lays out the need for an institutional reorientation or shift in emphasis from organization-specific to enterprise-wide approaches. This means: (1) horizontal integration within the Department and unity of effort through greater interagency collaboration; (2) engaging in a coordinated and portfolio-based approach to planning, programming, budgeting and execution; and (3) significant reforms at the governance, management and execution levels. To accomplish this direction, there needs to be a focused goal and concerted emphasis on shifting from systems acquisition to capabilities-based portfolio management (or portfolio systems acquisition). Starting in FY 2008, this program enables collaborative efforts to implement the QDR direction outlined above in order to achieve portfolio systems acquisition goals. The program is broken up into two focus areas (Portfolio Management and Reform Initiatives) and consolidates work previously performed under various other Program Elements.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0604875D8Z: *Joint Systems Architecture Development*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	15.247	8.052	6.346	-	6.346
Current President's Budget	12.089	8.052	4.731	-	4.731
Total Adjustments	-3.158	-	-1.615	-	-1.615
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.317	-			
• Defense Efficiency - Report, Studies, Board, and Commissions	-2.841	-	-0.613	-	-0.613
• Defense Efficiency - Contractor Staff Support	-	-	-0.935	-	-0.935
• Defense Efficiency - Baseline Review	-	-	-0.058	-	-0.058
• Economic Assumptions	-	-	-0.009	-	-0.009

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604875D8Z: *Joint Systems Architecture Development*	PROJECT P875: *Joint Systems Architecture Development*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P875: *Joint Systems Architecture Development*	5.683	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Due to the Weapon System Acquisition Reform Act of 2009 which directed the Secretary of Defense to appoint a Director for Systems Engineering reporting to the Undersecretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) and a Director of Developmental Test and Evaluation also reporting to the USD(AT&L), in FY 2011, Systems Engineering efforts have been transferred to a new Systems Engineering Program Element (0605142D8Z).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Systems Engineering (FY 09 - FY 11) and Joint Advanced Concepts (FY 09) Initiatives	5.683	-	-
FY 2010 Accomplishments: - Developed and conducted initial assessment of Military Department capability for early application of systems engineering and development planning. - Evaluated the Office of the Secretary of Defense (OSD) system analysis needs and developed a plan to implement system analysis, development planning oversight and support for acquisition. - Developed guidance for integration risk and assessing integration readiness.			
FY 2011 Plans: Funds have been transferred from this Program Element (PE) to the new Systems Engineering PE, due to the Weapon System Acquisition Reform Act of 2009 which directed the Secretary of Defense to appoint a Director for Systems Engineering reporting to the Undersecretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)). The USD(AT&L) initiated implementation of the Act by establishing a new office of the Director, Systems Engineering, and a new Office of the Director, Developmental Test and Evaluation and reallocating resources from the former office of the Director, Systems and Software Engineering.			
Accomplishments/Planned Programs Subtotals	5.683	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0604875D8Z: *Joint Systems Architecture Development*	**PROJECT** P875: *Joint Systems Architecture Development*

E. Performance Metrics

Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604875D8Z: *Joint Systems Architecture Development*	PROJECT P876: *Portfolio Systems Acquisition (PSA)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P876: *Portfolio Systems Acquisition (PSA)*	6.406	8.052	4.731	-	4.731	3.876	4.133	4.375	5.961	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Departments 2005 Quadrennial Defense Review (QDR) laid out the need for an institutional reorientation or shift in emphasis from organization-specific to enterprise-wide approaches. This meant: (1) horizontal integration within the Department and unity of effort through greater interagency collaboration; (2) engaging in a coordinated and portfolio-based approach to planning, programming, budgeting and execution; and (3) significant reforms at the governance, management and execution levels. The Department's 2010 QDR report further addressed reforming how we buy, noting that the conventional acquisition process is too long and too cumbersome to fit the needs of the many systems that require continuous changes and upgrades—a challenge that will become only more pressing over time. The Department will improve how it matches requirements with mature technologies, maintains disciplined systems engineering approaches. To accomplish this direction, there needed to be a focused goal and concerted emphasis on shifting from acquisition of individual systems to portfolio management (or portfolio systems acquisition). This program enables collaborative efforts to implement the QDR direction outlined above and to achieve portfolio systems acquisition goals and to develop and implement acquisition reform initiatives. The program is broken up into two focus areas (Portfolio Management and Reform Initiatives) and consolidates work previously performed under various other Program Elements.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Portfolio Systems Acquisition Initiatives	6.406	8.052	4.731
FY 2010 Accomplishments: -Conducted assessments of Capability Portfolios for cost savings opportunities. -Participated in an analysis of current and future adequacy of the military aircraft industrial base. -Participated in Unmanned Systems portfolio reviews and the Maritime ISR review. -Provided analytical support to the Unmanned Aircraft Systems Task Force, Airspace Integration IPT, and in reviews of Unmanned Systems program execution. -Performed a study of the solid rocket motor industrial base -Performed a review of the Integrated Air and Missile Defense portfolio -Prepared Counter Weapons of Mass Destruction roadmap and provided technical and analytical support for CWMD System of Systems work -Performed Ground Moving Target Indicator cost-benefit analysis -Conducted system support and analyses of rotary wing aviation programs including Future Vertical Lift. -Assessed progress of enhanced DoD fuze enabling technologies. -Maintained the Conventional Munitions Database.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0604875D8Z: *Joint Systems Architecture Development*	**PROJECT** P876: *Portfolio Systems Acquisition (PSA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Provided technical expertise for strategy development, making recommendations on programmatic direction, and for developing DoD positions relating to Global Nuclear Defense and to Conventional Prompt Global Strike. -Coordinated issues related to DoD equities with Global Nuclear Defense throughout the Department and with the interagency. -Articulated DoD courses of action and views on homeland defense implementation and compliance issues in multiple bilateral and multilateral fora. -Continued implementation support of program management initiatives. -Conducted analyses and support implementation of acquisition reform initiatives (e.g., WSARA, IMPROVE). -Provided analytical support to the Homeland Defense Coordinator function within OUSD(AT&L) -Conducted analyses of warfare areas to reduce duplication and identify opportunities for cost savings. -Supported development of US/UK Ground Moving Target Indicator (GMTI) collector interoperability. ***FY 2011 Plans:*** Continuation of FY 2010 efforts. ***FY 2012 Plans:*** -Conduct assessments of Capability Portfolios for cost savings opportunities with particular focus on Unmanned Systems, ISR, and Rotary Wing Systems. -Articulate DoD courses of action and views on homeland defense implementation and compliance issues in multiple bilateral and multilateral fora. -Provide technical expertise in support of warfare area portfolios. -Provide analytical support to the Homeland Defense Coordinator function within OUSD(AT&L). -Prepare roadmaps to guide investments in critical areas (e.g., unmanned systems; counter weapons of mass destruction, future vertical lift). -Conduct analyses of warfare areas to reduce duplication and identify opportunities for cost savings. -Assess progress of program management initiatives and implement new initiatives. -Conduct analyses and support implementation of acquisition efficiencies.			
Accomplishments/Planned Programs Subtotals	6.406	8.052	4.731

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not Applicable

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604875D8Z: *Joint Systems Architecture Development*	PROJECT P876: *Portfolio Systems Acquisition (PSA)*

E. Performance Metrics

Not Applicable

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604940D8Z: *Central Test and Evaluation Investment Program (CTEIP)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	160.351	162.286	140.231	-	140.231	151.521	147.426	147.924	146.418	Continuing	Continuing
940: *Central Test and Evaluation Investment Program (CTEIP)*	160.351	162.286	140.231	-	140.231	151.521	147.426	147.924	146.418	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Since its inception in FY 1990, this program element has been used to fund the development of critically needed, high priority Test and Evaluation (T&E) capabilities for joint/multi-Service requirements. The Central Test and Evaluation Investment Program (CTEIP) uses a corporate investment approach to combine Service, Defense, and other government agencies T&E needs, maximize opportunities for joint efforts, and avoid unwarranted duplication of test capabilities. CTEIP focuses investments on projects that will have high productivity returns on investment. Projects under the CTEIP Program Element (PE) support two basic tasks: investments to improve the test capabilities base (Joint Improvement and Modernization (JIM) projects) and development of near-term solutions to test capability shortfalls in support of ongoing operational test programs (Resource Enhancement Project (REP)).

The JIM funds critically needed T&E investments in the major functional areas of: air combat; armament and munitions; Command, Control Communication, Computer and Intelligence (C4I) and networks; common range instrumentation; electronic combat; land combat; sea combat; space combat; target systems; and test environments. Examples of project subject matter include: highly accurate time-space-position information, network enhanced telemetry, miniaturized flight safety systems, realistic urban test environments, ground testing for hypersonic systems and satellites, and end-to-end testing of infrared countermeasure systems. CTEIP continues as the focal point for fostering common architectures throughout the test and training communities to enhance the sharing of resources and links between test and training ranges.

CTEIP has provided special focus to institutionalize the use of modeling and simulation (M&S) as a practical test tool; to link ranges through internetting to enhance inter-range and inter-Service cooperation and resource sharing; and, to ensure development and acquisition of common instrumentation necessary for a more efficient test infrastructure.

Analyses of alternative solutions are conducted for each investment project to validate T&E requirements, to define integrated support systems, and to determine overall cost effectiveness of the proposed test investments. The use of Department of Defense (DoD)-wide criteria for requirement validation, prioritization, and risk assessment ensures an effective test resource investment program.

The REP funds development of near-term solutions for critical ongoing operational tests supporting decisions on major, high priority defense acquisition programs. These unanticipated operational test (OT) capability requirements arise from several sources such as a new threat system identified during OT planning, acquisition of foreign military assets that are critical in determining weapon system operational effectiveness, short timelines between system design maturity and scheduled OT, and emerging technologies and test requirements resulting from operational concept changes mandated by Congress or Director, Operational Test & Evaluation (DOT&E), or system-of-systems testing. Funding these activities under the CTEIP provides the opportunity to coordinate and integrate these near-term test requirements with the total DoD test and evaluation investment planning, and ensures their availability and legacy for other programs that may have similar testing requirements.

This Research Category 6.4 PE includes special studies, analyses, and strategic planning related to test capabilities and infrastructure, and supports the development and application of proven technologies to provide major test and evaluation capabilities required to meet DoD component weapon system test requirements.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0604940D8Z: *Central Test and Evaluation Investment Program (CTEIP)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	160.959	162.286	165.007	-	165.007
Current President's Budget	160.351	162.286	140.231	-	140.231
Total Adjustments	-0.608	-	-24.776	-	-24.776
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	2.400	-			
• SBIR/STTR Transfer	-2.790	-			
• Other Program Adjustments	-0.218	-	-	-	-
• Improving DoD Business Operations	-	-	-2.959	-	-2.959
• Efficiency and Enhancement Initiatives- Overhead Reductions	-	-	-1.618	-	-1.618
• Economic Assumption Reductions	-	-	-0.199	-	-0.199
• Program Execution Adjustment	-	-	-20.000	-	-20.000

Change Summary Explanation

• Improving DoD Business Operations. As part of the Department of Defense reform agenda, implemented a review of the organization to align resources to the most critical priorities and eliminate lower priority functions. (FY 2012: $-2.959)

• Efficiency and Enhancement Initiatives- Overhead Reductions. As part of the Department of Defense reform agenda, reduced funds needed for contractor support through increased efficiency and elimination of lower priority requirements (FY 2012: $-1.618)

• Program Execution Adjustment. Internal Departmental realignment of funds to meet higher priority needs (FY 2012: $20.000)

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Central Test and Evaluation Investment Program	160.351	162.286	140.231
FY 2010 Accomplishments: JIM Projects: - Completed the Directed Energy Test and Evaluation Capability project to provide improved test and evaluation capabilities for directed energy weapons.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604940D8Z: *Central Test and Evaluation Investment Program (CTEIP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Completed system development of the Soft Impact Location Capability project to provide the necessary instrumentation, signal processing, communication, and data processing capabilities to detect and locate projectile and missile weapons within an 800m by 800m impact area. - Completed system development of the Horizontal Fast Rise Electromagnetic Pulse (EMP) Pulser project to provide the required EMP testing environment for large aircraft under test. - Completed system development of the Advanced Communications Environment –Faithful Timeslot Messaging project to adapt the current Joint Communications Simulator antenna pattern and propagation effects to provide timeslot dependent attenuation of Link 16 terminal output. - Completed system development of the Towed Airborne Plume Simulator project to provide a capability to test airborne infrared countermeasure systems in a dynamic threat environment, to include realistic clutter background. - Completed risk reduction and initiated systems development for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. - Completed system development of the Joint Mobile Infrared Countermeasures Test System project to provide infrared spectrum test instrumentation for open air ranges. - Completed the Gulf Range Mobile Instrumentation Capability project to provide new distributed testing capabilities for aircraft and range communications. - Completed validation of flight test procedures and unmanned aerial vehicle (UAV) operations in the U.S. National Airspace alongside manned aircraft, under the UAV Systems Operations and Validation Program. - Completed the Advanced Surface-To-Air Missile (SAM) Hardware Simulator Development – Integrated Technical Evaluation Assessing Multiple Sources (ITEAMS) project to develop a detailed design of a threat radar system using available scientific and technical intelligence data. - Completed the Pacific Range Interoperability Test and Evaluation Capability project to enhance interoperability between test and training assets in the Pacific and other DoD ranges and facilities. - Completed the Joint Gulf Range Complex Upgrade project to provide upgraded range control capabilities at the Gulf Range. - Completed the Joint Advanced Missile Instrumentation project to develop and demonstrate time-space-position information, flight termination / safe and arm, and telemetry functions on advanced missile platforms. - Continued systems development of the Joint Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Interoperability Test and Evaluation Capability project to develop a capability to test increasingly complex multi-discipline data fusion concepts. - Continued system development of the Space Threat Assessment Testbed project to provide a capability to conduct subsystem and system level combined natural and man-made space environmental effects testing of critical space assets. - Continued systems development for the Objective Helicopter Icing Spray System project to provide an enhanced capability to perform in-flight icing and rain testing for low-speed air vehicles.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604940D8Z: *Central Test and Evaluation Investment Program (CTEIP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continued development of the Advanced Radar Environment Simulator, under the Joint Installed Systems Test Facility Product Improvements project, to provide improved installed systems capabilities needed to support next generation aircraft testing. - Continued the Test and Training Enabling Architecture Software Development Activity to promote integrated testing and simulation-based acquisition through the use of a logical range consisting of distributed live, virtual, and constructive elements tied together by a common architecture. - Continued the Tri-Service and CTEIP support projects. - Continued threat system simulator development efforts to improve integration, reduce potential duplication in threat and target development, and ensure that accurate, cost-effective representations of threat systems are available to support testing. - Continued pre-development activities of the Integrated Network Enhanced Telemetry project to develop a network-enhanced telemetry capability for T&E ranges and facilities. - Continued concept development and preliminary design of the Hypersonic Propulsion Test Capability project to provide a variable Mach number aerodynamic propulsion test capability at the Arnold Engineering Development Center. - Initiated requirements development and planning for the Multi-Level Secure (MLS) Joint/Coalition Network Environment project to develop a standardized, DoD multi-level secure and cross-domain data management T&E network architecture. - Initiated preliminary design of the Subminiature Flight Safety System project to provide a warhead compatible, universal, subminiature low-cost flight termination system. - Initiated requirements development and planning for the Joint Urban Test Capability to provide capabilities for testing in a realistic urban environment. - Initiated requirements development and planning for the Joint Unmanned Aerial Systems (UAS) Mission Environment project to develop a capability for testing UAS in realistic system of systems environments. - Initiated risk reduction and system definition for the Joint Distributed Infrared Countermeasures (IRCM) Ground Test System project to provide an end-to-end ground test system enabling complete testing of IRCM systems. - Initiated and completed the Savannah Combat Readiness Training Center (CRTC) Training Enabled Maneuver Instrumentation project to provide integration of tactical data links, Advanced Combat Maneuver Instrumentation (ACMI), and advanced threat emitters into a comprehensive display solution. - Initiated and completed the Border Security and Defense Systems Research project to assess T&E needs and test technology gaps in testing interoperability of disparate biometric systems and databases, and test interoperability of net-centric systems employed in border/perimeter security. Resource Enhancement Project: - Completed validation testing for the Precision Target Signatures subproject. - Completed project demonstration for the Net-Centric Test Agent Capability subproject.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604940D8Z: *Central Test and Evaluation Investment Program (CTEIP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Completed system fabrication and acceptance testing of the Infantry Automatic Rifle Test Resource Unit Fire Hit Discriminator subproject test capability. - Completed verification and validation efforts for the Submarine Launched Countermeasure Emulator subproject. - Completed development of the Threat Model Assessment Program subproject. - Completed the end-to-end closed loop verification, validation and accreditation for the Tactical End-to-End Closed Loop Simulation subproject. - Completed systems requirements analysis and initiate the design of the Multi-Spectral Sea and Land Target Simulator subproject. - Completed requirements analysis and initiate the hardware development efforts for the 25K Threat Target Launcher subproject. - Initiated development of the Battle Command Network Integration and Simulation subproject to provide the capability to test the interoperability and network connectivity transmission capabilities of the Joint Tactical Radio System Ground Mobile Radio. - Initiated the development of the Operational Command and Control Instrumentation subproject to provide the capability to assess the National Capital Region Integrated Air Defense System's ability to effectively facilitate positive command and control over ground based air defense systems. - Initiated the development of the Lightweight Alternative Power Source subproject to provide a non-intrusive stand-alone power source for test instrumentation to support the Early Infantry Brigade Combat Team (E-IBCT) Initial Operational Testing. - Initiated the development of the GAVELS Night Vision Capability to support Excalibur testing in both day and night conditions. - Initiated the development of the Ground Mounted Seeker Simulator to develop an open air missile simulation for the I-32 and I-34 associated threat missiles to support the operational testing of the Integrated Defensive Electronic Countermeasures (IDECM) system. - Initiated the development of the Distributed Timing Instrumentation Environment to develop a specific timing data measurement system to improve OT&E timing accuracy and statistical validity in testing the Global Command and Control System. - Initiated the development of the J-31 Radar Missile Gun System provide the threat representative performance to test the IDECM system effectiveness against threat representative jammers.			
FY 2011 Plans: JIM Projects: - Complete development of the Advanced Radar Environment Simulator, under the Joint Installed Systems Test Facility Product Improvements project, to provide improved installed systems capabilities needed to support next generation aircraft testing. - Complete requirements development and planning for the Joint Unmanned Aerial Systems (UAS) Mission Environment project to develop a capability for testing UAS in realistic system of systems environments. - Complete requirements development and planning and initiate concept development and preliminary design of a Joint Urban Test Capability to provide capabilities for testing in a realistic urban environment.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604940D8Z: *Central Test and Evaluation Investment Program (CTEIP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continue systems development of the Joint C4ISR Interoperability Test and Evaluation Capability project to develop a capability to test increasingly complex multi-discipline data fusion concepts. - Continue systems development for the Objective Helicopter Icing Spray System project to provide an enhanced capability to perform in-flight icing and rain testing for low-speed air vehicles. - Continue system development for the Space Threat Assessment Testbed project to provide a capability to conduct subsystem and system level combined natural and man-made space environmental effects testing of critical space assets. - Continue systems development for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. - Continue the Test and Training Enabling Architecture Software Development Activity to promote integrated testing and simulation-based acquisition through the use of a logical range consisting of distributed live, virtual, and constructive elements tied together by a common architecture. - Continue the Tri-Service and CTEIP support projects. - Continue threat system simulator development efforts to improve integration, reduce potential duplication in threat and target development, and ensure that accurate, cost-effective representations of threat systems are available to support testing. - Continue design of the Subminiature Flight Safety System project to provide a warhead compatible, universal, subminiature low-cost flight termination system. - Continue requirements development and planning for the Multi-Level Secure (MLS) Joint/Coalition Network Environment project to develop a standardized, DoD multi-level secure and cross-domain data management T&E network architecture. - Continue concept development and preliminary design of the Hypersonic Propulsion Test Capability project to provide a variable Mach number aerodynamic propulsion test capability at the Arnold Engineering Development Center. - Initiate system development for the Missile Warning System and flares segment of the Joint Distributed Infrared Countermeasures (IRCM) Ground Test System project to provide an end-to-end ground test system enabling complete testing of IRCM systems. - Initiate the Next Generation Electronic Warfare Environment Generator project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Initiate systems development for the Integrated Network Enhanced Telemetry project Block I capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities. Resource Enhancement Project: - Complete integration and testing for the Battle Command Network Integration and Simulation subproject. - Complete the validation testing for the 25K Transportable Target Launcher subproject. - Complete system fabrication and conduct acceptance tests for the Multi-Spectral Sea and Land Target Simulator subproject.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604940D8Z: *Central Test and Evaluation Investment Program (CTEIP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Complete the validation, verification and accreditation for the Operational Command and Control Instrumentation System subproject. - Complete Verification and Validation for the Submarine Launched Countermeasure Emulator subproject. - Initiate the development of the MILSATCOM Atmospheric Scintillation Simulator subproject to provide a simulated scintillation to assess the survivability of the Advanced Extremely High Frequency System during operational testing. - Continue the development of the Lightweight Alternative Power Source subproject. - Continue the development of the Ground Mounted Seeker Simulator subproject. - Continue the development of the Distributed Timing Instrumentation Environment subproject. ***FY 2012 Plans:*** JIM Projects: - Complete system development for the Missile Warning System and flares segment of the Joint Distributed Infrared Countermeasures (IRCM) Ground Test System project to provide an end-to-end ground test system enabling complete testing of IRCM systems. - Complete concept development and preliminary design and initiate system development of a Joint Urban Test Capability to provide capabilities for testing in a realistic urban environment. - Complete requirements, development and planning for the Multi-Level Secure (MLS) Joint/Coalition Network Environment project to develop a standardized, DoD multi-level secure and cross-domain data management T&E network architecture. - Complete concept development and preliminary design of the Hypersonic Propulsion Test Capability project to provide a variable Mach number aerodynamic propulsion test capability at the Arnold Engineering Development Center. - Continue systems development of the Joint C4ISR Interoperability Test and Evaluation Capability project to develop a capability to test increasingly complex multi-discipline data fusion concepts. Complete development of Spiral 3 capability by integrating the principal protocols of the Joint Intelligence Networks and the Net Ready Key Performance Parameter (KPP). - Continue system development for the Objective Helicopter Icing Spray System project to provide an enhanced capability to perform in-flight icing and rain testing for low-speed air vehicles. - Continue system development for the Space Threat Assessment Testbed project to provide a capability to conduct subsystem and system level combined natural and man-made space environmental effects testing of critical space assets. - Continue systems development for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. - Continue systems development for the Integrated Network Enhanced Telemetry project Block I capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0604940D8Z: *Central Test and Evaluation Investment Program (CTEIP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continue the Test and Training Enabling Architecture Software Development Activity to promote integrated testing and simulation-based acquisition through the use of a logical range consisting of distributed live, virtual, and constructive elements tied together by a common architecture. - Continue the Tri-Service and CTEIP support projects. - Continue threat system simulator development efforts to improve integration, reduce potential duplication in threat and target development, and ensure that accurate, cost-effective representations of threat systems are available to support testing. - Continue development of the Joint Unmanned Aerial Systems (UAS) Mission Environment project to develop a capability for testing UAS in realistic system of systems environments. - Continue the Next Generation Electronic Warfare Environment Generator project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Initiate the Miniature Air-Launched Decoy integration portion of the Subminiature Flight Safety System project to provide a warhead compatible, universal, subminiature low-cost flight termination system. - Initiate requirements development and planning for selected high-priority multi-service test capability proposals endorsed by the DoD Test and Evaluation Executive Agent. Resource Enhancement Project: - Complete the development of the Lightweight Alternative Power Source subproject. - Complete the development of the Ground Mounted Seeker Simulator subproject. - Complete the development of the Distributed Timing Instrumentation Environment subproject. - Complete the development of the MILSATCOM Atmospheric Scintillation Simulator subproject. - Initiate development of instrumented facilities to evaluate our next generation of sensors, weapons, platforms, and C4ISR systems in a realistic urban environment. - Initiate development of hardware simulators to test missile warning systems of new generation electronic warfare (EW) suites in a dynamic environment. - Initiate the development of non-intrusive instrumentation to address near term OT capability shortfalls to evaluate advanced sensor system performance in harsh environments.			
Accomplishments/Planned Programs Subtotals	160.351	162.286	140.231

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604940D8Z: *Central Test and Evaluation Investment Program (CTEIP)*

F. Performance Metrics

Percentage of CTEIP projects that were developed and delivered to the DoD test community over the past five years.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604942D8Z: *Assessments & Evaluations*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	2.500	2.757	-	2.757	2.775	2.884	2.991	3.094	Continuing	Continuing
P805: *Assessments & Evaluations*	-	2.500	2.757	-	2.757	2.775	2.884	2.991	3.094	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP at (703) 697-1282.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	2.500	2.600	-	2.600
Current President's Budget	-	2.500	2.757	-	2.757
Total Adjustments	-	-	0.157	-	0.157
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense Efficiency - Report, Studies, Boards and Commissions	-	-	-0.324	-	-0.324
• Defense Efficiency - Contractor Staff Support	-	-	-0.234	-	-0.234
• Economic Assumptions	-	-	-0.005	-	-0.005
• Defense Efficiency - Baseline Review	-	-	0.750	-	0.750
• Other Defense Efficiency - Baseline Review	-	-	-0.030	-	-0.030

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions. nDefense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission. Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0604942D8Z: *Assessments & Evaluations*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Assessments & Evaluations	-	2.500	2.757
FY 2010 Accomplishments: Not applicable.			
FY 2011 Plans: No applicable, Information is Classified.			
FY 2012 Plans: No applicable, Information is Classified.			
Accomplishments/Planned Programs Subtotals	-	2.500	2.757

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

No applicable, Information is Classified.

F. Performance Metrics

Not applicable. Classified

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0604943D8Z: *Thermal Vicar*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	8.768	8.851	7.827	-	7.827	7.747	7.671	7.695	7.853	Continuing	Continuing
P943: *Thermal Vicar*	8.768	8.851	7.827	-	7.827	7.747	7.671	7.695	7.853	Continuing	Continuing
Quantity of RDT&E Articles											

Note

In FY2010, Congress added $2.4M to Thermal Vicar by mistake. A corrective reprogramming was accomplished to move the funding to the intended program.

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP at (703) 697-1282.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	9.045	8.851	9.103	-	9.103
Current President's Budget	8.768	8.851	7.827	-	7.827
Total Adjustments	-0.277	-	-1.276	-	-1.276
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustment	-0.277	-	-0.293	-	-0.293
• Defense Efficiency - Reports, Studies, Boards and Commissions	-	-	-0.657	-	-0.657
• Defense Efficiency - Contractor Staff Support	-	-	-0.234	-	-0.234
• Economic Assumptions	-	-	-0.013	-	-0.013
• Defense Efficiency - Baseline Review Re-distribution	-	-	-0.079	-	-0.079

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0604943D8Z: *Thermal Vicar*

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Thermal Vicar	8.768	8.851	7.827
Description: Not applicable. Information is Classified. ***FY 2010 Accomplishments:*** Not applicable. Information is Classified. ***FY 2011 Plans:*** Not applicable. Information is Classified. ***FY 2012 Plans:*** Not applicable. Information is Classified.			
Accomplishments/Planned Programs Subtotals	8.768	8.851	7.827

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

Not applicable.

F. Performance Metrics

Not applicable.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605100D8Z: *Joint Mission Environment Test Capability (JMETC)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	9.203	10.287	10.479	-	10.479	10.743	10.433	10.484	10.380	Continuing	Continuing
100: *Joint Mission Environment Test Capability (JMETC)*	9.203	10.287	10.479	-	10.479	10.743	10.433	10.484	10.380	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Joint Mission Environment Test Capability (JMETC) program was established for the purpose of implementing the Department's strategy to move to an enterprise-centric, distributed test capability that results in acquisition systems fielded with enhanced joint capabilities, reduced program costs, and improved acquisition timelines. The JMETC program implements the infrastructure capabilities defined in the DoD's "Testing in a Joint Environment Roadmap" to provide acquisition program managers a robust nation-wide capability to "test like we fight." JMETC provides a persistent, distributed test and evaluation (T&E) capability that otherwise would not be readily available to Service/Component acquisition programs. This program is funded within the RDT&E Management Support Budget Activity because it is intended to provide test capability in support of RDT&E programs.

JMETC creates a common corporate capability to link live systems with virtual and constructive representations in order to generate a realistic joint mission test environment for the system(s) being tested. JMETC is a widely applicable, persistent, service provider for the Department's acquisition and net-centric programs. Key JMETC products include readily available connectivity over existing networks, standard data transport solutions, tools and utilities for planning and conducting distributed integrations, and a reuse repository. This common integration capability, through the use of the Test and Training Enabling Architecture (TENA), provides compatibility between JMETC and the Joint National Training Capability (JNTC), streamlining reuse of technical resources across the test and training communities. In turn, this integration capability enables combined test and training exercises.

By linking distributed facilities, JMETC allows customers to efficiently evaluate their warfighting capability in a realistic joint mission environment. This enables a customer-defined joint mission test environment for systems engineering and testing, extensible to training and experimentation, in a timely and cost effective manner.

JMETC's institutional funding builds, maintains, and operates the JMETC infrastructure and pays for persistent availability of national connectivity for testing; data communications middleware; identification of interface standards; common software tools and components; and a data archive and reuse repository. It also funds JMETC program management, facilities, equipment, operating costs, and special studies and analysis related to distributed test capabilities and infrastructure. Key attributes of the JMETC include: persistency; interoperability; reuse; various combinations of distributed capabilities (reconfigurable infrastructure to meet customer requirements); modeling and simulation (M&S) linkage; Live-Virtual-Constructive (LVC) test resource integration; and common support to both Service and Joint needs. System engineering, training, and experimentation all benefit from a corporate JMETC developed for T&E.
The Test Resource Management Center (TRMC) is the Department's lead for the JMETC program, and oversees both its development and its operations.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605100D8Z: *Joint Mission Environment Test Capability (JMETC)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	9.379	10.287	10.494	-	10.494
Current President's Budget	9.203	10.287	10.479	-	10.479
Total Adjustments	-0.176	-	-0.015	-	-0.015
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.162	-			
• Other Program Adjustments	-0.014	-	-	-	-
• Economic Assumption Reductions	-	-	-0.015	-	-0.015

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Mission Environment Test Capability	9.203	10.287	10.479

FY 2010 Accomplishments:

- Completed and disseminated a Department-wide study and report of identified issues, impacts, and improvement recommendations to the DoD Information Assurance Certification and Accreditation Process (DIACAP).
- Completed the Joint Distributed Test Infrastructure Capabilities Based Assessment; the Study Brief and Recommendations were endorsed and accepted by the Net-Centric Functional Capabilities Board on July 9, 2010. The Test Resource Management Center was charged with implementing those recommendations.
- Constructed the joint mission environment (utilizing live test resources interacting with virtual and constructive simulations) and successfully completed the test planning and test operations for the Joint Close Air Support (JCAS) Distributed Test in response to the US Joint Forces Command (USJFCOM) requirement for test data on the end-to-end timing of every segment of the warfighter's call for close air support to verify and improve the JCAS Mission Thread developed by USJFCOM in coordination with the Services.
- Continued upgrade of the Reuse Repository to provide general program information; provided lessons learned from previous events; stored software interfaces, tools, utilities, and test metadata; provided capabilities of each site on the JMETC infrastructure; provided all help desk functions; published the "best-of-breed" distributed test tools process; and provided opportunity for collaboration, making all available to the DoD T&E community for reuse.
- Continued to provide distributed test infrastructure and support to acquisition programs and events as follows: Air Ground Integrated Layer Exploration (AGILE) Fire 10-2 and 10-3; B1-B Interoperability and Fully Integrated Data Link Testing; Battlefield Airborne Communications Node (BACN) Joint Urgent Operational Need (JUON) (Development Test/Operational Test (DT/

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605100D8Z: *Joint Mission Environment Test Capability (JMETC)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
OT)); United Endeavor 10-1; Joint Integrated Air and Missile Defense Organization's (JIAMDO) Joint Sensor Integration; Joint Expeditionary Forces Experiment (JEFX) 10-1, 10-2, and 10-3; JIAMDO's Correlation/Decorrelation Interoperability Test (C/DIT) Integration Events; Broad Area Maritime Surveillance System (BAMS) Live, Virtual, Constructive (LVC) Distributed Event (DE) (Unmanned Aircraft Systems in a National Airspace); Joint Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (JC4ISR) Interoperability Test and Evaluation Capability (InterTEC) System Integration Test; Test and Training Enabling Architecture (TENA) Testing; and Joint Surface Warfare (JSuW) Joint Capability Technology Demonstration testing (four tests). - Continued collaboration with the Services to rationalize and consolidate distributed T&E services to the JMETC infrastructure. The Air Force Integrated Collaborative Environment (AF-ICE) has already completed the transition to the JMETC infrastructure. The Army has confirmed plans to transition distributed test services (e.g., Cross-Command Collaboration Effort, etc.) to the JMETC infrastructure and the coordination continues to transition the Navy's Distributed Engineering Plant to the JMETC infrastructure. - Continued providing requirements analysis support to acquisition programs such as Small Diameter Bomb, Brigade Combat Team Modernization Program, Joint Integrated Air and Missile Defense's Joint Track manager, and Multi-Mission Maritime Aircraft (MMA). - Continued to work with the JMETC Users Group to facilitate development and incorporation of the highest priority improvements to the distributed test software and standard interfaces to meet customer requirements. JMETC conducted three Users Group meetings in FY10 with an average of 245 participants from all DoD Components. Through the JMETC Users Group, the JMETC program office continued to assess and evaluate "best-of-breed" distributed test tools for application by the DoD T&E community. - Continued to expand the JMETC persistent connectivity infrastructure from 38 sites to 57 sites to meet customer requirements. - Continued conducting a technical watch for commercially available software tools to reinforce the current suite of JMETC standard distributed test support tools. - Continued outreach efforts to new acquisition programs that must demonstrate compliance with Net-Ready Key Performance Parameter requirements. - Continued planning support to on-going programs, particularly Joint Strike Fighter (JSF), MMA, Joint Tactical Radio System Airborne Maritime Fixed (JTRS-AMF), Gerald R. Ford Class (CVN-21), Multi-Function Advance Data Link (MADL), Army Brigade Combat Team Modernization Program, Navy Program Executive Office (PEO) for Integrated Warfare Systems (IWS), and InterTEC. - Initiated planning for the development of a JMETC mobile node to support transitory site distributed test needs.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605100D8Z: *Joint Mission Environment Test Capability (JMETC)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Engaged/planned with more than 28 potential and active customers providing acquisition programs and test ranges with technical assistance on JMETC capabilities, standards, interfaces, tools, available nodes, and expertise in planning and conducting distributed tests. ***FY 2011 Plans:*** - Complete the concept development of a JMETC mobile node to support transitory site testing needs. - Continue to provide distributed test support for major customer events such as Joint Tactical Radio System (JTRS), JIAMDO Projects, Joint Interoperability Test Command's Joint Interoperability Tests (5 events), AGILE Fire (2 events), B-1B Fully Integrated Data Link Testing, BAMS LVC DE, Terminal Fury, BACN JUON, and Austere Challenge. - Continue to provide general distributed test support to customers such as Joint Strike Fighter M&S Interoperability, F-22 Data Link Testing, BAMS, Army Brigade Combat Team Modernization Program, MMA, CVN-21, JEFX, BACN JUON, Air Force Special Operations Command, and InterTEC Spiral 3, and for 3-10 smaller test activities. Assist and support customers with distributed test tools and expertise for planning their distributed events. - Continue outreach efforts to new acquisition programs that must demonstrate compliance with Net-Ready Key Performance Parameter requirements. - Continue planning support to on-going acquisition programs, particularly CVN-78, Army Brigade Team Modernization Program, JSF, and InterTEC. - Continue to provide distributed test planning support to other customers for their distributed test events. - Continue to support and upgrade the JMETC Reuse Repository to store software interfaces, tools, utilities, and test metadata making all available to the DoD test community for reuse. - Continue to expand and sustain the JMETC persistent connectivity infrastructure to some 63 sites to meet customer requirements in full consideration of maximizing their potential for reuse. Continue coordination with the High Performance Computing Modernization Office (HPCMO) to develop plans to improve network services focused on the Secure Defense Research and Engineering Network (SDREN) as well as implement an operational computer network defense capability. - Continue coordination efforts to rationalize and integrate Service distributed T&E infrastructure to the JMETC infrastructure. - Continue development and implementation of the “best of breed” distributed test tools selection process in coordination with the JMETC Users Group and complete plans and resource requirements determinations to sustain the “selected” tools. - Work with the T&E Community to define joint requirements for data management in the distributed test capability. Work with other DoD and Service programs to fulfill these requirements. ***FY 2012 Plans:*** - Continue to provide distributed test support for 3-4 major customer events such as Army Brigade Combat Team Modernization, MMA, CVN-21, and InterTEC, and 3-10 smaller test activities. Assist customers with distributed test tools and expertise for planning their distributed events.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605100D8Z: *Joint Mission Environment Test Capability (JMETC)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continue outreach efforts to new acquisition programs that must demonstrate compliance with Net-Ready Key Performance Parameter requirements. - Continue planning support to on-going acquisition programs, particularly JTRS, JIAMDO Projects, F-22, BAMS, JEFX, CVN-21, Army Brigade Combat Team Modernization, JSF, and InterTEC. - Continue to provide distributed test planning support to other customers for their distributed test events. - Continue coordination efforts to rationalize and integrate Service distributed T&E infrastructure to the JMETC infrastructure. - Continue to support and upgrade the JMETC Reuse Repository to store software interfaces, tools, utilities, and test metadata making all available to the DoD test community for reuse. - Continue to sustain the JMETC persistent connectivity infrastructure and expand as necessary to meet customer requirements in full consideration of maximizing the potential for reuse. - Continue "best of breed" distributed test tools selection process in coordination with the JMETC Users Group and complete plans and resource requirements determinations to sustain the "selected" tools. - Continue to expand and sustain the JMETC persistent connectivity infrastructure to meet customer requirements in full consideration of maximizing the potential for reuse.			
Accomplishments/Planned Programs Subtotals	9.203	10.287	10.479

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

- Expansion of initial capability to support acquisition program test requirements, providing distributed capability to test systems and demonstrating required joint capability.
- Successful use of integration software compatible with the JNTC and Joint Training infrastructure.
- Number of test sites/locations that are reused to support distributed tests using the JMETC infrastructure.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605104D8Z: *Technical Studies*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	44.705	49.282	34.213	-	34.213	34.220	35.225	35.762	36.347	Continuing	Continuing
P421: *Technical Studies*	44.705	49.282	34.213	-	34.213	34.220	35.225	35.762	36.347	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program is a key source of funding for the Office of the Secretary of Defense and the Joint Staff to manage studies, analysis, management, and technical support efforts strategically to improve and support policy development, decision making, management and administration of DoD programs and activities. Studies and analysis will examine current and alternative policies, plans, operations, strategies and budgets, and are essential for managing and responding to the ever-changing complex international, political, technological, economic, military, and acquisition environments in which national security planning decisions are made. The need for independent analysis has become particularly acute with the evolution of requirements for planning the reconstitution of forces affected by operations, and there is a strong need to incorporate the effects of operational analysis in force planning assessments. With the persistently complex security, threat, and economic environment, the need for objective analysis and forward looking planning for the mid and long-term is vital.

Beginning in FY 2010, this program element includes the budget request for the Global Theater Security Cooperation Management Information Systems (TSCMIS) program, which is an existing program that will be executed by the Joint Staff separately from the Technical Studies, Support, and Analysis program. The Global Theater Security Cooperation Management Information Systems program responds to OSD's Guidance for Employment of the Force so that Combatant Commanders, Military Department Chiefs, CSA Directors, and applicable Defense Agency and Field Activity Directors are able to use a tracking mechanism to account for their steady-state activities that is accessible to other DoD components. Together these tracking mechanisms will provide a global view of all steady-state activities conducted by DoD components. The intent of this program is to encourage further development of tracking mechanisms in order to achieve full visibility of Defense Department activities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605104D8Z: *Technical Studies*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	44.398	49.282	47.915	-	47.915
Current President's Budget	44.705	49.282	34.213	-	34.213
Total Adjustments	0.307	-	-13.702	-	-13.702
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	0.490	-			
• SBIR/STTR Transfer	-	-			
• DoD Efficiencies and Other Program Adjustments	-0.183	-	-2.233	-	-2.233
• Defense Efficiency - Report, Studies, Boards and Commissions	-	-	-11.404	-	-11.404
• Economic Assumptions	-	-	-0.065	-	-0.065

Change Summary Explanation

In following the program efficiencies guidance of the Secretary of Defense, the scope and detail of studies and analyses will be abridged in order to focus upon issues of the highest strategic importance to the Department of Defense while making every effort to continue supporting requirements materializing from legislative direction as required.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605104D8Z: *Technical Studies*	PROJECT P421: *Technical Studies*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P421: *Technical Studies*	44.705	49.282	34.213	-	34.213	34.220	35.225	35.762	36.347	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program is a key source of funding for the Office of the Secretary of Defense and the Joint Staff for studies, analysis, management, and technical support efforts to improve and support policy development, decision making, management and administration of DoD programs and activities. Studies and analysis will examine current and alternative policies, plans, operations, strategies and budgets, and are essential for managing and responding to the ever-changing complex international, political, technological, economic, military, and acquisition environments in which national security planning decisions are made. The need for independent analysis has become particularly acute with the evolution of requirements for planning the reconstitution of forces affected by operations, and there is a strong need to incorporate the effects of operational analysis in force planning assessments. With the persistently complex security, threat, and economic environment, the need for objective analysis and forward looking planning for the mid and long-term is vital.

Beginning in FY 2010 this program element includes funding for the Global Theater Security Cooperation Management Information Systems (TSCMIS) Program, which is a separate program from the OSD Technical Studies, Support & Analysis program. TSCMIS is an existing program which provides a global view of all steady-state activities conducted by DoD components and enables that information to be accessible by other DoD components. Proposed enhancements to TSCMIS will enable all of the Services and Combatant Commands to access information in this system and will allow the incorporation of data provided by other interagency partners.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Technical Studies and Analyses Support for the Office of the Secretary of Defense	32.242	35.882	25.040	-	25.040
FY 2010 Accomplishments: Technical Support for USD(Acquisition, Technology & Logistics): Studies and analyses of: Rotary wing and other vertical lift aviation platform capabilities, force mix options for expeditionary operations, joint conventional munitions requirements planning, hard and deeply buried target defeat options, homeland defense and civil support coordination, treaty implications on strategic forces, domestic microelectronics industrial base capabilities, mitigating systems integration risk, maritime domain awareness, implementing modeling and simulation in acquisition planning, weapons systems safety and reliability, NATO materiel stockpile planning, identification of new commercial tools for systems engineering, solid rocket motor planning and development, identifying acquisition program risk and causes, effects of global defense industry trends, defense industry acquisition and merger policy, analyses of the costs and benefits of using multiple suppliers,					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605104D8Z: *Technical Studies*	PROJECT P421: *Technical Studies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
policies to improve integration of specialty composite armor in ground vehicles, supply chain inventory management, vehicle repair depot requirements, total force management and integration of DoD logistics systems, technical support to various Defense Science Board task forces, evolving technologies and the acquisition process, international cooperative armament technology programs, improving interoperability with allies, use of technology for rehabilitating wounded warriors, logistics operations in coalition operations, NATO policy planning, programmatic issues in the areas of technology transfer and foreign disclosure, economic and financial impacts of changes to contracting policies, the effectiveness of the Small Business Innovation Research (SBIR) program, small business investment strategy, and DoD relations with small businesses Technical Support for the Director, Cost Assessment and Program Evaluation (formerly Director, Program Analysis & Evaluation): Studies and analyses regarding the following areas: Aircraft carrier force planning and capabilities assessment, force structure and weapons systems performance and cost effectiveness, rotary wing aviation and irregular warfare requirements, projecting the economic service life of weapons systems platforms, building analytical baselines in support of the Analytical Agenda and Multi-Service Force Deployment baselines, technical studies and analysis to support independent cost estimates, cost analyses for Major Acquisition Information Systems, manpower costs and medical cost growth, air to air platform capabilities, force readiness analyses, homeland defense and consequence management scenarios, naval warfare and missile defense capabilities, electronic warfare capabilities, human intelligence requirements for CENTCOM, mobility capabilities analyses, ground vehicle force mix alternatives, and analyses of the long-term strength and affordability of the defense program Technical Support for the USD(Policy): Studies and analyses in the following areas: Counter proliferation requirements analyses, national security policy reviews as required by national and departmental-level guidance, scenario effects of policy and programming actions, recommendations and analysis regarding military posture, future long range strike capabilities and requirements planning, maintaining security relationships with allies, operational assessments of irregular warfare capabilities, enhancing operational language capabilities, international space policy cooperation, regional security engagement options, policy research and analyses of transitional regions, resource effects on NATO force planning, international					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605104D8Z: *Technical Studies*	PROJECT P421: *Technical Studies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
cybersecurity policy, security risk management, political and legal implications of autonomous systems, and strategic-level simulations of areas of interest for legislative and executive branch decision-makers Technical Support for the USD(Personnel & Readiness): Studies and analyses in the following areas: Effects of incentives and other recent recruiting strategies on personnel readiness and retention, the effect of non-citizens in the military, forecasting enlistment shortfalls, reducing the probability of selecting recruits who become separated for misconduct, enlistment of high-demand linguists, operational reserve employer impact, selection policies for military academy admission, ethnicity and gender differences in officer career progression, civilian personnel management and development, valor decorations policy, management of reserve components, and providing responses to congressional requests and directives as required Technical Support for the ASD (Networks & Information Integration) and USD(Intelligence): Studies and analyses of: Network approaches and technical solutions in support of net-centric transformation, development of baseline metrics and evaluation standards to ensure appropriate systems support for defense and national leadership, development of approaches for ensuring adequate electromagnetic spectrum access for military operations, DoD facility security and antiterrorism policies, identifying gaps in information capability acquisition, defense intelligence training requirements, battlespace awareness performance measures, improving accessibility to foreign language translation services, and detection capabilities of space events Technical Support for the Joint Staff conducting joint research with OSD: Studies and analyses with OSD supporting evolving warfighting issues in counterterrorism and stability operations, DoD information assurance, logistics planning strategy, medical risk assessments from weapons of mass destruction threats and development of reaction capabilities, and participation in other studies directed by the Program Decision Memorandum and the Guidance for Development of the Force ***FY 2011 Plans:*** Technical Support for USD(Acquisition, Technology & Logistics): Studies and analyses of:					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605104D8Z: *Technical Studies*	PROJECT P421: *Technical Studies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Rotary wing aviation capabilities analyses, coalition MRAP operations, aircraft carrier force mix planning, strategic warfare portfolio planning, air and missile defense capabilities integration, joint conventional munitions requirements planning, joint service fuze technology, foreign acquisitions of defense-related firms, policy integration of existing industrial base capabilities assessments, rare earth elements supply risk management, the status of the liquid propulsion industrial base, sustainable manufacturing in the defense industrial base, lead free electronics technology transition, sustaining mid-tier defense suppliers, global defense industry trends, protecting the defense industrial-base from cyber security threats, countering hard and deeply buried targets, strengthening allied cooperative efforts in weapons systems research and development, mitigating offsets in allied defense procurement, allied planning in export control regimes, NATO agency reform planning, expeditionary camp operations, facilities recapitalization investment, improving energy and water efficiency in DoD installations, test and evaluation capabilities and the effects upon acquisition, DoD energy policy in acquisition planning, medical supply chain consolidation, improving efficiency in household goods transportation, weapons systems logistics support, NATO materiel stockpile planning, treaty compliance analyses, identifying acquisition program risk, support to Defense Science Board task forces on various evolving technological issues, evolving technologies and the acquisition process, international cooperative research and development programs, meeting service disabled veteran owned business acquisition goals, small business investment and acquisition strategy, the effectiveness of the Small Business Innovation Research (SBIR) program, and DoD small business subcontracting policy Technical Support for the Director, Cost Assessment and Program Evaluation (formerly Director, Program Analysis & Evaluation): Studies and analyses regarding the following areas: Force structure and weapons systems performance and cost effectiveness, capabilities toward non-traditional military challenges and irregular warfare capabilities, assessments in support of Analytical Agenda and Multi-Service Force Deployment baseline development, technical analysis to support weapons system independent cost estimates, comparative analyses of alternative weapons systems configurations and force levels, technical support for program analysis of alternatives, and continuation of development of critical management indicators, tools and methodologies for measuring the long-term trends, strength and affordability of the defense program Technical Support for the USD(Policy):					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605104D8Z: *Technical Studies*	PROJECT P421: *Technical Studies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Studies, analyses, and activities in the following areas: Evolving terrorist risks and counterterrorism security strategies, analyses of counter-proliferation security policies and initiatives, countering evolving threats from weapons of mass destruction, national security policy reviews as required by national and departmental-level guidance, recommendations and analyses regarding military posture, improving methodology and technological capabilities for analyses of defense planning scenarios, impact of cultural factors in international security operations planning, operational assessments of irregular warfare capabilities, nuclear weapons employment policy, and strategic-level simulations of areas of interest for legislative and executive branch decision-makers Technical Support for the USD(Personnel & Readiness): Studies and analyses in the following areas: Strategies to mitigate the long-term effects of extended and multiple personnel deployments on members and their families, effects of incentives on recent recruiting strategies on personnel readiness and retention, non-citizens in the military, dealing with end strength and economic changes, reserve component delayed entry accession accountability, the long-run economic well-being of enlisted military veterans, alternative credentials and the development of new accession tiers, creating flexibility and agility in officer management systems, future enlisted force profiles planning, new service member sexual assault prevention and responses, long-term effects of activation on Reserve component members and their employers, maintaining equal opportunity of the force, management of reserve components, and providing responses to congressional mandates and directives as required Technical Support for the USD(Intelligence): Studies and analyses of: Technologies and policies for prevention of data leakage, use of biometrics and forensic intelligence in operations, foreign acquisitions related to the telecommunications industry, acquisition and strategic investment approaches for space systems, strategic information operations analyses, extensible behavioral modeling, protecting mobile defense networks, military deception training and education needs, military intelligence language specialist requirements, organization and doctrinal planning for intelligence, surveillance, and reconnaissance capabilities					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605104D8Z: *Technical Studies*	PROJECT P421: *Technical Studies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Technical Support for the Joint Staff conducting joint research with OSD: Studies and analyses with OSD supporting DoD information assurance, joint medical analysis requirements, the future of unified command planning, Mexico and Central America strategic policy planning, strategic posturing for Korea stationed forces, ground combat assessments, and dispersed air operations against precision capable opponents ***FY 2012 Base Plans:*** Technical Support for USD(Acquisition, Technology & Logistics): Studies and analyses of: Weapons systems requirements and analyses in allied operations, future naval force mix planning, strategic warfare requirements, air and missile defense capabilities integration, munitions requirements planning, foreign investment in domestic defense-related firms, industrial base capabilities assessments, risk management of critical defense component supplies, future technology requirements in defense manufacturing, maintaining competition in the defense industry, global defense industry trends, maintaining hard target defeat capabilities, strengthening allied cooperative efforts in weapons systems research and development, effects on force capabilities by changes in allied procurement, strategic basing requirements, improving resource efficiency in DoD installations, test and evaluation capabilities and the effects upon acquisition, DoD energy policy in acquisition planning, logistics supply chain requirements, NATO materiel stockpile planning, treaty compliance planning, identifying acquisition program risk, support to Defense Science Board task forces on various evolving technological issues, small business investment and acquisition strategy, the effectiveness of the Small Business Innovation Research (SBIR) program, and DoD contracting policies toward small businesses Technical Support for the Director, Cost Assessment and Program Evaluation (formerly Director, Program Analysis & Evaluation): Studies and analyses regarding the following areas: Assessments of force structure and weapons systems performance and cost effectiveness, evolving requirements for weapons system development, assessments in support of Analytical Agenda and Multi-Service Force Deployment baseline development, technical studies and analysis to support independent cost estimates, strategic mobility requirements, comparative analyses of alternative weapons systems configurations and					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605104D8Z: *Technical Studies*	PROJECT P421: *Technical Studies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
force levels, technical support for program analysis of alternatives, and continuation of development of critical management indicators, tools and methodologies for measuring the long-term trends, strength and affordability of the defense program Technical Support for the USD(Policy): Studies, analyses, and activities in the following areas: Security transition strategy in areas of conflict, planning in identifying and countering emerging risks by terrorist organizations, strengthening allied civil and military counterterrorism capabilities, analyses of counter-proliferation security policies and initiatives, homeland defense planning, national security policy reviews as required by national and departmental-level guidance, recommendations and analyses regarding military posture, improving methodology and technological capabilities for analyses of defense planning scenarios, regional security assessments, cybersecurity strategy, and strategic-level simulations of areas of interest for legislative and executive branch decision-makers Technical Support for the USD(Personnel & Readiness): Studies and analyses in the following areas: Research to identify and understand the most effective ways to recruit and retain the Total Force, the impact of the changing roles being assumed by the DoD workforce, progress made in sustainment of training ranges and the impact on overall training quality, strategies for mitigating the impact of extended and multiple combat deployments on Service members and their families, the effectiveness of organizational change efforts instituted in response to strategic planning initiatives, the impact of age demographics on the civilian workforce, the effectiveness of training transformation initiatives, the effects of activation on Reserve component members and employers of reservists, recruiting and retaining both military and civilian personnel in critical specialties, strengthening quality of life and maintaining equal opportunity and diversity of the force, and responding to congressional requests and directives as required Technical Support for the USD(Intelligence): Studies and analyses of:					

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605104D8Z: *Technical Studies*	PROJECT P421: *Technical Studies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Operational security effectiveness and countermeasures analyses, optimization of biometric intelligence in human intelligence and counterintelligence operations, effects of net-centricity on information security, optimizing data usability in systems planning, intelligence training and education reform, military intelligence language specialist planning and follow on analyses Technical Support for the Joint Staff conducting joint research with OSD: Studies and analyses with OSD supporting joint logistics operations, hybrid warfare planning, intelligence operations requirements, geopolitical contingency policy planning, and joint contingency basing requirements ***FY 2012 OCO Plans:*** None					
Title: Global Theater Security Cooperation Management information Systems (TSCMIS) Program ***Description:*** Global Theater Security Cooperation Management Information Systems (TSCMIS) Program. This item is a separate requirement from the Technical Studies, Support, and Analysis program beginning in FY 2010 and will be executed by the Joint Staff apart from the Technical Studies, Support, and Analysis program. Organizations implementing TSCMIS include all of the Geographic Combatant Commands and the Army, and this program change will facilitate the inclusion of all of the Combatant Commands, all of the military services, DTRA, and DSCA. Future years will result in the integration of other security cooperation databases, including foreign military sales, training databases, and other interagency partner databases into the TSCMIS portal. Overall project costs include two TSCMIS personnel per organization with a TSCMIS system in addition to any personnel currently being used by the organization for TSCMIS support. ***FY 2010 Accomplishments:*** FY 2010 Project management ($360K); requirements ($258K); development ($5,500K); modification to existing TSCMIS ($1,545K); TSCMIS personnel ($4,800K) ***FY 2011 Plans:*** FY 2011 Project management ($278K); requirements ($199K); development ($4,271K); modification to existing TSCMIS ($1,590K); TSCMIS personnel($3,712K) ***FY 2012 Base Plans:***	12.463	13.400	9.173	-	9.173

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605104D8Z: *Technical Studies*	PROJECT P421: *Technical Studies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
FY 2012 Project management ($287K); requirements ($205K); development ($4,436K); modification to existing TSCMIS ($420K); TSCMIS personnel($3,825K) ***FY 2012 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	44.705	49.282	34.213	-	34.213

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

PE 0605104D8Z Technical Studies, Support & Analysis

FY 2012 BA: $34.213M FY 2012 BA Assoc w/Metrics: $34.213M Percent FY 2011 BA Assoc w/Metrics: 100%

This program conducts over one-hundred fifty actions per fiscal year to support a wide variety of national security goals of the Department and is designed to encourage a collaborative research approach among the components of OSD and the Joint Staff. The research and study projects supported by this program are closely integrated with the strategic goals of the Department of Defense. The focus of studies varies across a wide spectrum including weapons systems cost analysis, strengthening and leveraging alliances, human resource and military personnel management, examination of innovative technologies, application of technology to operational doctrine, and many other issues of emerging importance. Most of the actions are long to intermediate-range in outlook, and the program allows organizational leaders to plan and guide their research toward meeting their highest-priority goals and other high-level guidance such as executive branch performance management objectives and the National Security Strategy of the United States of America.

In following the program efficiencies guidance of the Secretary of Defense, the scope and detail of studies and analyses will be abridged in order to focus upon issues of the highest strategic importance to the Department of Defense while continuing to make every effort to support requirements from legislative direction.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605110D8Z: *USD (A&T) Critical Technology Support*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	4.719	4.743	1.486	-	1.486	0.863	0.930	0.996	1.691	Continuing	Continuing
P110: *USD (A&T) Critical Technology Support*	4.719	4.743	1.486	-	1.486	0.863	0.930	0.996	1.691	Continuing	Continuing

A. Mission Description and Budget Item Justification

(1) Export Control Program:

The Militarily Critical Technologies Program (MCTP) provides the technical reference guidance in support of development and implementation of DoD technology security policies on international transfers of defense related goods, services, and technologies. The export control program provides an ongoing assessment and analysis of global goods and technologies. Determines significant advances in the development, production, and use of military capabilities by potential adversaries. Determines goods and technologies being developed worldwide with potential to significantly enhance or degrade U.S. military capabilities in the future. Identified in the Export Administration Act of 1979 and extended by Presidential Executive Order to review militarily critical goods and technologies and to consider worldwide technology capabilities. The Militarily Critical Technologies List (MCTL) is a congressionally mandated source document for identification of leading edge and current technologies monitored worldwide for national security, nonproliferation control of weapons of mass destruction, and advanced conventional weapons.

Specific activities include:
- Develop and publish in electronic form (including Internet version, both restricted and public) various editions of the MCTL document that describe the military and proliferation significance of various technologies.
- Monitor and assess dual-use and military technologies worldwide.
- Assist in the development of proposals for negotiation in various multilateral export control regimes.
- Limited worldwide technology capability assessments for the MCTL and other U.S. international critical technologies efforts.
- Identification and determination of technical parameters for proposals for international control of weapons of mass destruction.
- Identification of foreign technologies of interest to the DoD and opportunities for international cooperative research and development.

(2) The DoD Damage Assessment Management Office (DAMO) Program: The Defense Industrial Base (DIB) secures critical DoD programs and technology by protecting DoD unclassified information resident on and transiting DIB unclassified networks. This project further establishes the DoD DAMO to coordinate the conduct of assessments involving the loss of DoD information requiring controls resulting from the unauthorized access and/or exfiltration of technical data maintained on unclassified DIB networks. The DAMO identifies and categorizes the impact of the loss of acquisition information contained on the affected systems, organizes and coordinates the assessment reports with all affected components and DIB members, and establishes a process to appropriately share collected information with all affected parties. The DAMO establishes policy and procedures for conducting damage assessments applicable to all DoD components and in concert with Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation (DFAR) procedures pertaining to contracts with the DIB.

Specific activities include:

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605110D8Z: *USD (A&T) Critical Technology Support*

- Coordination with DIB partners, Defense Cyber Crime Center (DC3), Military Departments, DoD Agencies, Counterintelligence/Law Enforcement Agencies, and Service Acquisition Executives (SAES) to assess impacts from information compromised.
- Establish and organize the DAMO as the centralized office for coordinating damage assessments relating to unauthorized access or loss of DoD information.
- Develop and publish DoD policy guidance regarding the conduct of Cyber Intrusion Damage Assessments for all DoD components to implement relating to DoD information on defense acquisition programs.
- Further develop, coordinate, implement and update the Concept of Operations (CONOPS) and operating procedures as required.
- Provide technical expertise and analyses in assessing the impact of data lost as a result of the unauthorized access and/or exfiltration.
- Develop and implement the DAMO library of assessments maintaining cyber intrusion damage assessment reports and ensure access is available to all with a “need-to-know” for analytical purposes.
- Develop a damage assessment ontology and data repository in order to provide analysis to identify trends in the targeting and compromise of defense program information.
- Conduct data triage and coordinate Inter-Service/Agency Integrated Product Teams to review compromised information provided to DoD by DIB partners under the DIB Cyber Security/Information Assurance (CS/IA) Framework Agreements.
- Document and publish the results of cyber intrusion damage assessments.
- Document, refine, and publish damage assessment processes in coordination with the DC3, Military Departments, and other Agencies/activities as appropriate.
- Provide an OUSD(AT&L) review and comment on cyber security related policy, directives, and instructions.
- Coordinate with the intelligence and counterintelligence communities in the reporting of cyber intrusions involving DoD acquisition information and the feedback needed to make use of the assessment findings.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605110D8Z: *USD (A&T) Critical Technology Support*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	4.914	4.743	4.772	-	4.772
Current President's Budget	4.719	4.743	1.486	-	1.486
Total Adjustments	-0.195	-	-3.286	-	-3.286
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.148	-			
• Other Program Adjustments	-0.047	-	-	-	-
• Defense Efficiency - Baseline Review	-	-	-1.033	-	-1.033
• Defense Efficiency - Report, Studies, Boards and Commissions	-	-	-0.095	-	-0.095
• Defense Efficiency - Civilian Staffing Reduction	-	-	-0.750	-	-0.750
• Defense Efficiency – Contractor Staff Support	-	-	-1.403	-	-1.403
• Economic Assumptions	-	-	-0.005	-	-0.005

Change Summary Explanation

Defense Efficiency - Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency - Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Defense Efficiency – Civilian Staffing Reduction. As part of the Department of Defense reform agenda, eliminates civilian full-time equivalent positions to maintain, with limited exceptions, civilian staffing at the FY 2010 level.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605110D8Z: *USD (A&T) Critical Technology Support*	PROJECT P110: *USD (A&T) Critical Technology Support*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P110: *USD (A&T) Critical Technology Support*	4.719	4.743	1.486	-	1.486	0.863	0.930	0.996	1.691	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

(1) Export Control Program:

The Militarily Critical Technologies Program (MCTP) provides the technical reference guidance in support of development and implementation of DoD technology security policies on international transfers of defense related goods, services, and technologies. The export control program provides an ongoing assessment and analysis of global goods and technologies. Determines significant advances in the development, production, and use of military capabilities by potential adversaries. Determines goods and technologies being developed worldwide with potential to significantly enhance or degrade U.S. military capabilities in the future. Identified in the Export Administration Act of 1979 and extended by Presidential Executive Order to review militarily critical goods and technologies and to consider worldwide technology capabilities. The Militarily Critical Technologies List (MCTL) is a congressionally mandated source document for identification of leading edge and current technologies monitored worldwide for national security, nonproliferation control of weapons of mass destruction, and advanced conventional weapons.

Specific activities include:
- Develop and publish in electronic form (including Internet version, both restricted and public) various editions of the MCTL document that describe the military and proliferation significance of various technologies.
- Monitor and assess dual-use and military technologies worldwide.
- Assist in the development of proposals for negotiation in various multilateral export control regimes.
- Limited worldwide technology capability assessments for the MCTL and other U.S. international critical technologies efforts.
- Identification and determination of technical parameters for proposals for international control of weapons of mass destruction.
- Identification of foreign technologies of interest to the DoD and opportunities for international cooperative research and development.

(2) The DoD Damage Assessment Management Office (DAMO) Program: The Defense Industrial Base (DIB) secures critical DoD programs and technology by protecting DoD unclassified information resident on and transiting DIB unclassified networks. This project further establishes the DoD DAMO to coordinate the conduct of assessments involving the loss of DoD information requiring controls resulting from the unauthorized access and/or exfiltration of technical data maintained on unclassified DIB networks. The DAMO identifies and categorizes the impact of the loss of acquisition information contained on the affected systems, organizes and coordinates the assessment reports with all affected components and DIB members, and establishes a process to appropriately share collected information with all affected parties. The DAMO establishes policy and procedures for conducting damage assessments applicable to all DoD components and in concert with Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation (DFAR) procedures pertaining to contracts with the DIB.

Specific activities include:

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605110D8Z: *USD (A&T) Critical Technology Support*	PROJECT P110: *USD (A&T) Critical Technology Support*

- Coordination with DIB partners, Defense Cyber Crime Center (DC3), Military Departments, DoD Agencies, Counterintelligence/Law Enforcement Agencies, and Service Acquisition Executives (SAES) to assess impacts from information compromised.
- Establish and organize the DAMO as the centralized office for coordinating damage assessments relating to unauthorized access or loss of DoD information.
- Develop and publish DoD policy guidance regarding the conduct of Cyber Intrusion Damage Assessments for all DoD components to implement relating to DoD information on defense acquisition programs.
- Further develop, coordinate, implement and update the Concept of Operations (CONOPS) and operating procedures as required.
- Provide technical expertise and analyses in assessing the impact of data lost as a result of the unauthorized access and/or exfiltration.
- Develop and implement the DAMO library of assessments maintaining cyber intrusion damage assessment reports and ensure access is available to all with a "need-to-know" for analytical purposes.
- Develop a damage assessment ontology and data repository in order to provide analysis to identify trends in the targeting and compromise of defense program information.
- Conduct data triage and coordinate Inter-Service/Agency Integrated Product Teams to review compromised information provided to DoD by DIB partners under the DIB Cyber Security/Information Assurance (CS/IA) Framework Agreements.
- Document and publish the results of cyber intrusion damage assessments.
- Document, refine, and publish damage assessment processes in coordination with the DC3, Military Departments, and other Agencies/activities as appropriate.
- Provide an OUSD(AT&L) review and comment on cyber security related policy, directives, and instructions.
- Coordinate with the intelligence and counterintelligence communities in the reporting of cyber intrusions involving DoD acquisition information and the feedback needed to make use of the assessment findings.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Militarily Critical Technologies Program (MCTL)	4.719	4.743	1.486
FY 2010 Accomplishments: (1) Export Control Program: - Conducted MCTL annual update and reviews: Successfully supported United States Government (USG) delegation at Wassenaar Arrangement 2010 to adjust multilateral technology security controls. - Completed the first cycle of bilateral assessment studies (six) with Japan. - Continued to strengthen outreach to the Services and the U.S. Departments of State and Commerce to exchange technical information through the Community Advisory Board (CAB) process, as well as technical representation on multilateral export control panels. - Improved and expanded the focus of the DSTL effort to represent a broader global research watch. - Built definitions and a tiered approach to both the MCTL and DSTL processes. - Adapted the Wiki-based collaborative environment to evolving search engine requirements. (2) Damage Assessment Management Office (DAMO) Program:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605110D8Z: *USD (A&T) Critical Technology Support*	PROJECT P110: *USD (A&T) Critical Technology Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Conducted two Damage Assessment Working Group (DAWG) Meetings with Government stakeholders and partner companies to refine processes, provide updates, and improve corporate understanding of the Damage Assessment (DA) process. - Initiated 39 damage assessment cases based on nominations from DoD-DIB Collaborative Information Sharing Environment (DCISE) closed three cases. - Participated in development of language for Federal Acquisition Regulation/Defense Federal Acquisition Regulation (FAR/DFAR) update on protecting unclassified defense information and inclusion of damage assessments. - Developed initial draft of Damage Assessment Ontology. - Coordinated with DC3 in the enhancement of analysis tools to improve the speed and effectiveness of data triage activities. - Continued work with DC3 programmers in development of a custom tool to assist DAMO in the triage and analysis of datasets. - Completed initial draft of DAMO Standard Operating Procedures (SOPs). Coordinated linkages with DC3 processes. - Conducted periodic meetings with Service leads to foster process and status discussions. - Established damage assessment linkage with the office of the National Counterintelligence Executive for cooperation in the conduct of damage assessments. - Coordinated with the Defense Acquisition University on the incorporation of a Cyber Intrusion track (including damage assessment discussions) for an Executive Program Management Course. - Participated in and provided a damage assessment update to the DIB Cyber Security/Information Assurance (CS/IA) Executive Committee.			
FY 2011 Plans: (1) Export Control Program: - Conduct MCTL annual update and reviews: Assist USG delegation to refine control criteria for microelectronics, bio-pharmaceutical items, and remote controlled vessels and vehicles. - Scope expansion of bilateral technology studies program to include the Republic of Korea and initiate robotics study with Japan. - Continue to strengthen outreach to the Services and the U.S. Departments of State and Commerce to exchange technical information through the Community Advisory Board (CAB) process, as well as technical representation on multilateral export control panels. - Improve and expand the focus of the DSTL effort to represent a broader global research watch. (2) Damage Assessment Management Office (DAMO) Program: - Finalize damage assessment ontology and implement a data repository to allow for trend analysis and data discovery. - Continue to conduct data triage and coordinate inter-Service/Agency Integrated Product Teams to review compromised information provided to DoD by DIB partners under the DIB CS/IA Framework Agreements. - Continue to document and publish the results of damage assessments.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605110D8Z: *USD (A&T) Critical Technology Support*	PROJECT P110: *USD (A&T) Critical Technology Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continue coordination with DC3 in the refinement of custom analysis tools for improved data triage and analysis and development of a tracking system to maintain visibility into case status and progress. - Continue to document, refine, and publish damage assessment processes in coordination with the Defense Cyber Crime Center, the Military Departments, and other agencies/activities as appropriate. - Continue to provide an OUSD(AT&L) review and comment on cyber security related policy, directives, and instructions. - Continue coordination with the intelligence and counterintelligence communities in the reporting of cyber intrusions involving DoD acquisition information and the feedback needed to make use of the assessment findings. ***FY 2012 Plans:*** - Transition legacy data to Positive Control List. - Maintain technical interface to export technology security organizations and functions. - Migrate technical standard production to external activity.			
Accomplishments/Planned Programs Subtotals	4.719	4.743	1.486

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

The indicator below allow the DoD to measure the success of the Critical Technology Support program element:

- Currency of the MCTL with perspectives of user community.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605117D8Z: *Foreign Materiel Acquisition and Exploitation*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	93.969	95.520	64.524	-	64.524	62.130	60.794	59.892	54.568	Continuing	Continuing
411: *Foreign Materiel Acquisition and Exploitation*	93.969	95.520	64.524	-	64.524	62.130	60.794	59.892	54.568	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program manages the acquisition and assessment of foreign weapons systems, military equipment, and military and dual-use technologies for the military services and defense agencies.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	94.921	95.520	96.611	-	96.611
Current President's Budget	93.969	95.520	64.524	-	64.524
Total Adjustments	-0.952	-	-32.087	-	-32.087
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program adjustment	-0.952	-	-0.087	-	-0.087
• Mission transfer to Air Force	-	-	-32.000	-	-32.000

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Foreign Materiel Acquisition and Exploitation	93.969	95.520	64.524
FY 2010 Accomplishments: Mission Support (Details provided in Defense-Wide classified book)			
FY 2011 Plans: Mission Support (Details provided in Defense-Wide classified book)			
FY 2012 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605117D8Z: *Foreign Materiel Acquisition and Exploitation*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Mission Support (Details provided in Defense-Wide classified book)			
Accomplishments/Planned Programs Subtotals	93.969	95.520	64.524

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

Details provided in Defense-Wide classified book

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605128D8Z: *Classified Program*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	92.066	-	-	-	-	-	-	-	-	Continuing	Continuing
128: *Classified Program*	92.066	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Classified

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	92.066	-	-	-	-
Total Adjustments	92.066	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	92.066	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: 128: *Classified Program*		
Congressional Add: *Classified*	92.066	-
Congressional Add Subtotals for Project: 128	92.066	-
Congressional Add Totals for all Projects	92.066	-

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011
Congressional Add: Classified	92.066	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605128D8Z: *Classified Program*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011
FY 2010 Accomplishments: Classified		
Congressional Adds Subtotals	92.066	-

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

None

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	33.155	32.755	19.080	-	19.080	19.204	19.792	30.181	32.095	Continuing	Continuing
P130: *FCT*	33.155	32.755	19.080	-	19.080	19.204	19.792	30.181	32.095	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Foreign Comparative Testing (FCT) Program supports the warfighter by leveraging mature technologies and equipment from allied nations and coalition partners to satisfy U.S. defense requirements, thereby accelerating the U.S. acquisition process and lowering development costs. Authorized by Title 10, U.S. Code, Section 2350a(g), the FCT Program is managed by the Office of Secretary of Defense (Rapid Fielding Office), Comparative Technology Office (CTO). FCT projects are nominated by the Services and U.S. Special Operations Command (USSOCOM) each year. Evaluation processes for project selection include a detailed review to confirm the proposed item addresses valid requirements, a thorough market survey, and development of a viable acquisition strategy. A seven-day Congressional notification of the intent to fund the projects is required, prior to the issuance of funds to the Services and USSOCOM for execution.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	34.771	32.755	33.048	-	33.048
Current President's Budget	33.155	32.755	19.080	-	19.080
Total Adjustments	-1.616	-	-13.968	-	-13.968
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.000	-			
• SBIR/STTR Transfer	-0.563	-			
• Other Adjustments	-0.053	-	-	-	-
• Defense Efficiency – Baseline Review	-	-	-11.199	-	-11.199
• Defense Efficiency - Report, Studies, Boards, and Commissions	-	-	-0.553	-	-0.553
• Defense Efficiency – Civilian Staffing Reduction	-	-	-1.250	-	-1.250
• Defense Efficienty - Contractor Staff Support	-	-	-0.935	-	-0.935
• Economic Assumptions	-	-	-0.031	-	-0.031

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Civilian Staffing Reduction. As part of the Department of Defense reform agenda, eliminates civilian full-time equivalent positions to maintain, with limited exceptions, civilian staffing at the FY 2010 level.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P130: *FCT*	33.155	32.755	19.080	-	19.080	19.204	19.792	30.181	32.095	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Foreign Comparative Testing (FCT) Program supports the warfighter by leveraging mature technologies and equipment from allied nations and coalition partners to satisfy U.S. defense requirements, thereby accelerating the U.S. acquisition process and lowering development costs. Authorized by Title 10, U.S. Code, Section 2350a(g), the FCT Program is managed by the Office of Secretary of Defense (Rapid Fielding Office), Comparative Technology Office. FCT projects are nominated by the Services and U.S. Special Operations Command (USSOCOM) each year. Evaluation processes for project selection include a detailed review to confirm the proposed item addresses valid requirements, a thorough market survey, and development of a viable acquisition strategy. A seven-day Congressional notification of the intent to fund the most meritorious projects is required, prior to the issuance of funds to the Services and USSOCOM for execution.

Since the program's inception in 1980, Office of Secretary of Defense (OSD) has initiated 630 projects; 551 projects have been completed to date. Of the 266 evaluations that met the sponsors' requirements, 218 led to procurements worth approximately $10.400 billion in FY 2010 constant year dollars. With an Office of Secretary of Defense investment of about $1.170 billion, the FCT Program realized an estimated RDT&E cost avoidance of $7.800 billion in FY 2010 constant year dollars.

The FCT Program is a catalyst for teaming or other business relationships between foreign and U.S. industries. Many successful FCT projects result in the licensed production of the qualified foreign item in the U.S. Other nations recognize the long-term value of such practices for competing in the U.S. defense market and the resultant strengthening of the "two-way street" in defense procurement. For the U.S., the result often means the creation of jobs and contributions to local economies. To date, companies across 33 states benefited from FCT projects.

Final selection of FY 2012 FCT new start projects will be determined in September 2011.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: 25mm Round for Joint Strike Fighter (JSF)/F-35 (Air Force)	0.222	-	-
Description: Qualifies a 25mm round for the Joint Strike Fighter (JSF) gun. A Dual-purpose 25mm x 137 medium caliber ammunition round manufactured by RWM Schweiz (Rheinmetall Defense) AG in Switzerland will be tested by the 28th Test Wing at Eglin Air Force Base. The primary outputs are to satisfy the US Air Force F-35/A gun system requirement of defeating soft targets and lightly armored vehicles with a single ammo type. No round is currently qualified to meet the unique lethality requirements for the JSF.			
FY 2010 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Technical evaluation completed. Contracted for qualification test effort. Developed programmatic and contractual documentation required for contract award for rounds. Procured ammunition and initiated qualification testing. ***FY 2011 Plans:*** Complete qualification testing 4Q FY 2011. ***FY 2012 Plans:*** Complete Weapons Safety Review process. Obtain production decision and fielding and deployment release. Publish all test reports.			
Title: 40mm L60 High Explosive Incendiary (HEI) (Special Operations Command) ***Description:*** Qualifies multiple sources of 40mm L60 High Explosive Incendiary (HEI) ammunition for the AC-130 gunship. Air Force Special Operations Command (AFSOC)planned to replace its Bofors 40mm cannon with a 30mm Bushmaster but due to fire control integration issues, AFSOC is no longer pursuing that option. The 40mm ammunition replacement is now a critical requirement as the current 40mm ammunition inventory is rapidly depleting at the current rate of usage. The primary outputs are one or more qualified sources for 40mm L60 HEI ammunition. ***FY 2010 Accomplishments:*** Completed program management reviews at all vendor production facilities and witnessed vendor demonstrations. Received test article rounds, fuzes, and fuzed projectiles bodies from all vendors. Conducted technical testing. ***FY 2011 Plans:*** Conduct operational testing, prepare test reports. Review test results and select production manufacturers. Obtain fielding and deployment release. Obtain munitions safety review certification. Obtain Milestone C decision, execute production options, and prepare Foreign Comparative Testing closeout report in 2Q FY 2011.	0.916	0.217	-
Title: A-10 / F-16 Three Dimensional Audio Integration (Air Force) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Test and qualify a three dimensional audio system for the A-10 and F-16 Block 30 platforms. This system will incorporate active and electronic noise reduction, spatial separation of multiple radio channels from multiple sources, and three dimensional threat audio cueing from on-board threat detection systems. The primary output is that 3D audio automatically sorts and presents information spatially in real time to the pilot. This dramatically increases situational awareness and allows the pilot to respond quicker by reducing pilot and information overload. In addition, audio systems currently installed in both the A-10 and the F-16 do not have active or electronic noise reduction capability. Noise reduction all but eliminates outside engine and other noise clutter thus enhancing and facilitating audio communication to the pilot.	-	4.015	2.409

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2011 Plans: Award contract for test article and initiate test planning. ***FY 2012 Plans:*** Initiate and complete technical and integration testing and initiate field user evaluation by the end of 2Q FY 2012. Complete field user evaluation by the end of 3Q FY 2012. Finalize technical test report and production decision by the end of 4Q FY 2012.			
Title: Accurate Low Cost Inertial Navigation Improvement (ALCINI) (Navy) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Test and evaluate a low cost Inertial Navigation System (INS) that provides higher weapons systems availability than legacy units in U.S. Navy ships and submarines. Expected benefits include the mitigation of performance challenges associated with weapon system alignment, supporting with new mission requirements and reduced Total Ownership Cost (TOC). ***FY 2011 Plans:*** Receive test articles by the end of 3Q FY 2011. Complete test plan development 4Q FY 2011. Conduct performance testing 4Q FY 2011 to 2Q FY 2012. ***FY 2012 Plans:*** Continue performance testing through 2Q FY 2012. Finalize other lab tests and assessment report during 3Q to 4Q FY 2012.	-	1.491	0.095
Title: Advanced Coatings for Small Arms (Special Operations Command) ***Description:*** Validates an advanced coating solution to small arms barrels that significantly improves barrel life, maintains accuracy over extended time, and provides visual wear indications of the end of barrel life. Advanced coatings also improve the life of suppressing devices typically used with sniper and assault rifles. The primary outputs are lifecycle performance test reports for two sniper weapons, the 0.300 Winchester Magnum and 0.50 caliber MK15 MOD 0 barrels, coated with the patented advanced internal coating on the barrel and suppressors. The M2 Heavy Barrel .50 caliber machine gun will also be coated and evaluated. ***FY 2010 Accomplishments:*** Submitted test summary plan and spend plan. Published proposal solicitation and selected vendor to participate in FCT. ***FY 2011 Plans:*** Award contract and ship barrels to vendor coating facility. Conduct project and test planning. Conduct engineering review of vendor data. Continue to analyze vendor data. ***FY 2012 Plans:***	1.005	0.737	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Receive coated barrels at Naval Surface Warfare Center Test Facility, Crane, Indiana. Perform operational testing and submit test reports, Milestone C decision to Milestone Decision Authority 4Q FY 2012. Submit Foreign Comparative Testing closeout report.			
Title: Airborne Stand-Off Radar (ASTOR) Precision Targeting (PT) (Navy) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Provide the Distributed Common Ground System – Navy (DCGS-N) and Marine Corps (DCGS-MC) with a capability to receive in near real-time, via Common Data Link (CDL) antenna systems, Intelligence, Surveillance, and Reconnaissance (ISR) data from Royal Air Force (RAF) Airborne Stand-Off Radar (ASTOR) platforms. The primary outputs of the ASTOR System aboard the Sentinel Aircraft are Synthetic Aperture Radar (SAR) images and Moving Target Indicator (MTI) contacts. Software modifications to the ISR processing, exploitation, and dissemination (PED) components currently used by DCGS-N will be implemented and tested to verify that ISR data from ASTOR Systems can be rapidly received, processed, screened for potential mission application, and exploited to produce targeting data that can be used by US weapon systems. This capability will allow US forces to leverage coalition ISR assets and reduce mission requirements for US ISR platforms. ***FY 2011 Plans:*** Establish contracts with US and UK support teams 2Q FY 2011. Investigate ASTOR processing and exploitation capabilities and begin software transfer and development on US DCGS components 3Q FY 2011. Coordinate plans for flight testing and evaluation to commence in 1Q FY 2012. ***FY 2012 Plans:*** Flight testing and evaluation through 1Q FY 2012. Complete validation analysis 3Q FY 2012. Deploy to DCGS-N and DCGS-MC units end of 4Q FY 2012.	-	1.804	1.446
Title: Airborne Tactical Extraction Platform (Special Operations Command) ***Description:*** Test an extraction platform that is capable of extracting up to ten people rapidly, from locations where rotorcraft cannot safely land. Existing airborne extraction systems are only capable of removing three individuals at a time. The primary outputs are a rotary wing extraction system that can accommodate up to 3,306 pounds of equipment and operators, allow operators to engage the enemy during extraction, and is simple to use. Fielding reduction is greater than seven years. ***FY 2010 Accomplishments:*** Completed procurement contract and took delivery of test articles. Conducted validation/technical testing and published test reports. Obtained material safety release. ***FY 2011 Plans:***	-	0.126	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Conduct operational testing and produce test reports. Obtain fielding and deployment release. Complete Foreign Comparative Testing closeout report 3Q FY 2011.			
Title: Arresting System for F-22 and Joint Strike Fighter (JSF)(Air Force) ***Description:*** Test a complete dual-disc BC11 braking system, including all associated hardware, software, and required spare consumables. Headquarters Air Combat Command/A7OI, Langley Air Force Base, Virginia will evaluate the BC11 computer-controlled caliper-disk aircraft arresting system from Scama of Vderstad, Sweden. The current 40 year old BAK-12 aircraft arresting system has become overburdened; it cannot be adjusted to safely stop an F-22 throughout the F-22's full operational range of stopping speeds and the lighter-weight F-16 without over stressing the tail hook and airframe. The BC11's computer controls include extensive self-diagnostics and would provide feedback to the airfield tower, as well as automated recordkeeping. Also, the system also would require significantly less maintenance and support, which in turn would result in overall lower life-cycle costs. ***FY 2011 Plans:*** Contract for test site and testing support at Navy Lakehurst. ***FY 2012 Plans:*** Conduct 130 dead-load runs at various speeds and angles, review test report, and procurement decision.	-	1.804	-
Title: Ballistic Fiber Evaluation for Soft Body Armors (Army) ***Description:*** Test recently developed ballistic aramid fibers that ballistic results show the ballistic performance measure for 9 mm handgun and fragments are much higher than currently used Kevlar and Twaron of the same weight. Initial ballistic testing has shown that it is 27 percent lighter than current Army's ballistic package. The primary output is a full scope evaluation of new ballistic fiber manufactured in a United Kingdom factory. The evaluation includes ballistic performance specifications, i.e. multiple grain fragmentation and 9 mm handgun. Additionally, the fiber will be evaluated for physical and mechanical properties, environmental effect, aging effect, and degradation. The objective is a new ballistic fiber for soft armor to reduce ballistic material weight by as much as 25 percent; and Prototype the Army standard soft armor Improved Outer Tactical Vest (IOTV) for operational testing and evaluation. ***FY 2010 Accomplishments:*** Test article contract awarded 3Q FY 2010. Safety release in 4Q FY 2010. Combined development and operational testing for 4Q FY 2010 and procurement decision for test article fabric samples 1Q FY 2011. ***FY 2011 Plans:***	0.313	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Continue testing and evaluation of prototypes including ballistic, mechanical/physical, environmental, and human factor testing. After successful testing, PM will initiate Berry Amendment waiver request through the official channel. Once approved, a modification on soft armor specification will be recommended to have lighter weight requirement.			
Title: Ceramic Tile Testing and Evaluation for Hard Body Armors (Army) ***Description:*** Tests new light-weight armor, Experimental Small Armor Protective Inserts (XSAPI), using Silicon Carbide (SiC) made by various foreign vendors with domestic SiC armor, to meet US Army's production needs. The Saint Gobain candidate has tested successfully and is in production for XSAPI. Contract value (five year) max quantity is 2,400,400 plates with a max value of $1.400 billion. The primary output is a new hard armor, XSAPI, with higher levels of ballistic projection than current SAPI with minimum weight increase. ***FY 2010 Accomplishments:*** Testing and evaluation has been completed for the following candidates: Hocheng, Schunk, Taiwan Steel, Saint Gobain (first round). Conducted second round ballistic testing on Nova Crystal samples. Conducted testing on light-weight samples from Saint Gobain. In 4Q FY 2010 tested Israeli Military Industries and Fedur (Spain) products. ***FY 2011 Plans:*** Continue to test remaining Saint Gobain plates. Complete testing and evaluation on IMI and Fedur plates.	0.447	-	-
Title: Color Digital X-Ray (Air Force) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Test and qualification of a non-destructive testing system that will enable the detection, characterization, and quantification of flaws in and under coatings that are used on military components. The candidate technology incorporates a unique software solution that extends the usefulness of standard digital X-Ray. The software component translates the digital X-Ray's shades of gray into user defined, and meaningful color mapping allowing quick and efficient characterization. The primary output The Color Digital X-Ray technology advanced in this proposal provides a real-time snapshot of the entire component profile. The colors presented are calibrated to identify only those anomalies that warrant operator attention, resulting in an increase of Probability of Detection and decrease of Probability of Miss. ***FY 2011 Plans:*** Award contract for test article, initiate technical testing. ***FY 2012 Plans:*** Complete technical testing and initiate field user evaluation 3Q FY 2012. Complete field user evaluation 3Q FY 2012. Finalize technical test report and production decision 4Q FY 2012.	-	0.921	1.014
Title: Containerized, Deployable Rigid Walled Shelters (CDRWS) (Army)	1.999	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Evaluates commercial-off-the-shelf containerized rigid wall shelters in an operational environment, with the purpose of determining if systems will satisfy Army Central Command (ARCENT) and Force Provider requirements for shelters. These shelter systems provide billeting and/or office configurations for robust temporary facilities replacing expeditionary soft walled shelters. The primary outputs are superior shelters and increased shelter production capacity; competitive foreign and domestic production sources; and shelters meeting safety standards and military requirements. ***FY 2010 Accomplishments:*** Completed Technical Testing and Operational Testing for three foreign shelter designs and one domestic design. Technical Testing conducted at Aberdeen Proving Ground (APG) and Operational Testing conducted at Isa Air Force Base (AFB) in Bahrain to support procurement decisions. ***FY 2011 Plans:*** Complete transportation and environmental testing. Evaluate the suitability of shelters by 2Q FY 2011. Procurement decision 3Q FY 2011.			
Title: Cyber Defense for C4I Networks (CDCN) (Navy) ***Description:*** Provide the US Navy an integrated information technology system for Cyber Defense of C4I Networks. The Commander, Pacific Fleet's Urgent Operational Needs Statement (UONS), requires a technical solution for network visualization, anomaly detection and response and the ability to query stored network traffic for information of interest. The primary outputs are a real-time detection and post event analysis for managing the security of complex networks; effective and efficient management of the Global Information Grid (GIG); and ability to quickly find, access, retrieve, and analyze information related to the operational health, performance, security, and mission readiness of the GIG. ***FY 2010 Accomplishments:*** Market investigation and down select completed 3Q FY 2010. Completed test plan 4Q FY 2010. ***FY 2011 Plans:*** Conduct operational user testing and assessment during 2Q FY 2011. Provide technical test report 3Q FY 2011. Submission of final decision packet in 4Q FY 2011.	1.719	0.842	-
Title: Deployable Runway Rubber Removal System (Air Force) ***Description:*** Evaluate a system that uses water to lift rubber deposits and paint from airfield pavement surfaces to restore runway friction and safe operating runway surfaces for military aircraft. Removal system is equipped with a vacuum to remove runway debris and mitigate foreign object debris damage to airplanes. The primary output is a deployable, Ultra-High Pressure (UHP) water runway rubber and paint removal system. The system uses 60 percent less water than the current system and completes	0.505	0.673	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
rubber removal in half of the time, with half of the manpower. The UHP System can evacuate the runway in the event of an emergency landing, while the current system cannot. ***FY 2010 Accomplishments:*** Contracted for test article, preliminary test planning and training. ***FY 2011 Plans:*** Technical testing followed by operator/user testing. Prepare test report and decision package. Procurement of product.			
Title: Digital – Battle Management Application (D-BMA) (Navy) ***Description:*** Test a Digital – Battle Management Application (D-BMA) that is an integrated Command and Control application that provides digital mapping and unit position locations output by the Global Command and Control System. The D-BMA provides combat functionality for transmission of digital orders, conducting mission planning, and enhancing combat situational awareness and effectiveness. Provides the United States Marine Corps (USMC) real-time terrain association of tactical data, and support mission planning, rehearsal, and combat operations while providing enhanced combat capability through an optimized, digital command and control. The primary outputs are reduced sensor to the shooter time; decreased cycle time between targets; and is provided faster and with more accuracy. ***FY 2010 Accomplishments:*** Completed contract award 3Q FY 2010. Completed test planning at the end of 3Q FY 2010. ***FY 2011 Plans:*** Receive test articles 1Q FY 2011. Initiate lab/integration testing at the beginning of 2Q FY 2011 and complete software accreditation mid 2Q FY 2011. Complete lab/integration and initiate technical testing efforts at beginning of 3Q FY 2011. Complete technical testing and initiate field user evaluation beginning 4Q FY 2011. ***FY 2012 Plans:*** Complete Procurement Decision and Finalize Technical Report during 1Q FY 2012.	1.675	0.982	-
Title: Electric Start & Generator System (ESGS) for Gas Turbines (Navy) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** The Electric Starter and Generator System (ESGS) comprises a starter motor/generator, a flywheel and controls to allow rapid restart of ship's gas turbine generators from dark ship scenarios. These scenarios arise from the absence of ship's power due to grid failure, a direct hit, or system malfunction. It has an 8:1 weight savings over the pneumatic counterpart.	-	1.064	0.358

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
On a shipboard application, the ESGS allows each engine to start independently, providing several alternatives for power and propulsion without the need to align other systems prior to a start event. ***FY 2011 Plans:*** Contract award in 2Q FY 2011. Complete test planning and Mission Readiness Plan (MRP) throughout 3Q to 4Q FY 2011. Fabricate the ESGS, conduct Original Equipment Manufacturer (OEM) testing, complete the Critical Design Review, and receive the ESGS units in 3Q to 4Q FY 2011. ***FY 2012 Plans:*** Conduct all test phases 1Q to 2Q FY 2012. Issue an ESGS test report on test findings in 3Q FY 2012. Procurement decision and issue closeout report in 3Q FY 2012.			
Title: Enhanced Fuze for 70mm Warhead (Special Operations Command) ***Description:*** Test an electronic time delay mode which allows the pilot to change fuze settings in-flight and engage a wider range of targets. Special Operations Little Bird helicopter pilots are missing targets of opportunity, and shooting through targets due to the inability to reset their rocket fuzes once airborne. The primary outputs are increased capability to defeat a variety of structures and reduced dependence on Joint Direct Attack Munitions and Hellfire Rockets. An Indefinite Delivery, Indefinite Quantity (IDIQ) Contract was established for 70mm rockets and fuzes. Fielding reduction is greater than seven years. ***FY 2010 Accomplishments:*** Completed vendor negotiation and issued contract for test articles. Vendor testing was initiated to address fuze failures and to refine a final design of the initiation system for the fuze. Obtained rockets for the live fire testing. ***FY 2011 Plans:*** Conduct Phase One technical testing. Obtain safety release and Airworthiness Certification. Gain Weapon System Explosives Safety Review Board approvals, which includes Hazards of Electromagnetic Radiation to Ordnance and Electro Static Discharge. ***FY 2012 Plans:*** Conduct Phase Two operational testing and user assessment. Complete publication of all test reports. Prepare production decision packet 3Q FY 2012. Submit Foreign Comparative Testing closeout report.	1.669	-	0.278
Title: Family of Next Generation Surveillance Systems (Special Operations Command) ***Description:*** The primary outputs are more cost effective technical solutions, replacing legacy surveillance systems with smaller, lighter, more robust, and energy efficient systems. Fielding reduction is greater than five years. ***FY 2010 Accomplishments:***	2.740	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Conducted technical testing and prepared test reports for various surveillance systems. Performed operational test/user assessment and published test reports. ***FY 2011 Plans:*** Complete production decision packet and obtain fielding and deployment release. Submit Foreign Comparative Testing closeout report 2Q FY 2011.			
Title: Fire Control System for Special Operation Forces (SOF) Combat Assault Rifle (SCAR) Grenade Launcher (Special Operations Command) ***Description:*** Validation testing of a fire control system that will extend the effective range of the MK13 Enhanced Grenade Launcher Module from 200 to 600 meters in an effort to counter rocket propelled grenade threats. The primary output is an integrated fire control and ammunition programming system needed to fire a medium velocity (extended range) 40mm programmable grenade from the MK13. Fielding reduction is greater than five years. ***FY 2010 Accomplishments:*** Identified engineering change requirements for medium velocity ammunition being tested and received final test configuration test articles. Doppler Radar testing of test ammunition produced additional change requirements. ***FY 2011 Plans:*** Receive and test approved configuration test rounds. Perform Government Testing and User Demonstration. Submit production decision packet and initiate staff action to obtain fielding and deployment release. Submit Foreign Comparative Testing closeout report 3Q FY 2011.	0.567	-	-
Title: Fuel Leak Detection System for Aircraft (Air Force) ***Description:*** Test two systems that have the potential to improve leak detection during depot maintenance thus reducing unexpected labor costs and improve aircraft quality and delivery to the warfighter. Current methods used to detect fuel leaks in full aircraft and off airframe components are slow, inaccurate, and result in leaks not being detected until an aircraft is refueled prior to the initial check flight. Leaks detected at this time add unexpected labor (over 4000 hours for the F-16 April 2008 to 2009) from additional defuel and purge, aircraft towing, airframe component removal and disassembly, along with potential increases (as an example for the F-16) of 30 to 45 day aircraft flow days. The primary output is a safe tracer gas leak detection system for F-16, A-10, and C-130 full aircraft and off air frame components. If successful, the system(s) can potentially be used at depot, field level, and DoD wide for multiple weapon systems. ***FY 2010 Accomplishments:***	0.223	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Purchase request submitted 4Q FY 2010. ***FY 2011 Plans:*** Test article delivery scheduled for 1Q FY 2011 with test article technical and safety testing scheduled for 1Q FY 2011. Qualification testing scheduled for 2Q FY 2011. Finalize technical test report and procurement decision are scheduled for 3Q FY 2011.			
Title: H-53 Low Cost and Reliable Generator Control Unit (Navy) ***Description:*** Test a lower cost/higher reliability Generator Control Unit (GCU) to remedy the shortfalls of the current system used on the H-53 platform. The program will evaluate a state-of-the-art GCU currently used on foreign aircraft that provides greater reliability. The primary outputs are unit cost of $5 to $6 thousand and reliability of 16 thousand Mean Time Between Failure (MTBF) hours. ***FY 2010 Accomplishments:*** Test article contract awarded during 2Q FY 2010. Test item technical data delivered during 3Q FY 2010. Completed Preliminary Design Review and Critical Design Review (PDR/CDR) successfully. ***FY 2011 Plans:*** Test article delivery scheduled for 2Q FY 2011. Test article technical and safety testing is scheduled for 2Q FY 2011. Qualification testing scheduled for 2Q to 3Q FY 2011. Finalize technical test report and procurement decision are scheduled for 4Q FY 2011.	0.168	-	-
Title: Hostile Fire Indications Modeling and Simulation (HFI M&S) (Navy) ***Description:*** Test a non-developmental HFI M&S System currently in use with the United Kingdom to mitigate the increasing threat of hostile fire from Unguided Munitions (UM). UM includes small arms, tracer rounds, Anti-Aircraft Artillery (AAA) and Rocket Propelled Grenades (RPGs)/unguided rockets. An integrated HFI M&S System will provide the Navy with a more realistic training experience through mimicking the capability of operational HFI Systems fielded in theater. ***FY 2010 Accomplishments:*** Initiated project planning 1Q FY 2010. Performed initial Hardware (HW)/Software (SW) evaluation at vendor Outside Continental United States (OCONUS) site and conducted HW/SW portability assessment 2Q FY 2010. Awarded contract in 4Q FY 2010. ***FY 2011 Plans:***	0.657	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
HW/SW performance testing planned for 2Q FY 2011. Planned integration assessment 3Q FY 2011. Final report/briefing scheduled for end of 3Q FY 2011.			
Title: Inner Diameter High Velocity Oxygenated Fuel (HVOF ID) capability to eliminate chrome on aerospace components (Air Force) - Contingent upon congressional appropriation or congressional notification ***Description:*** Test and qualify a new technology, which uses a HVOF spray gun to apply coatings to the inner diameter of components ten inches or less. The primary outputs are better efficiencies than current thermal spray gun technology and eliminating electrolytic hard chrome (EHC) plating thus, reducing the need for EPA permitting. HVOF ID Gun would increase component durability and increase warfighter weapon system availability. ***FY 2011 Plans:*** Award contract for test article, initiate test planning. ***FY 2012 Plans:*** Receive Test article, initiate technical and integration testing, complete technical and integration testing and initiate field user evaluation in 3Q FY 2012. Finalize technical test report and production decision in 4Q FY 2012.	-	0.614	-
Title: Joint Strike Fighter (JSF) Exhaust Heat Resistant Flight Deck Lighting Fixtures (Navy) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Test heat resistant shipboard in-deck lighting fixtures. The JSF exhaust is currently expected to destroy the legacy in-deck lighting fixtures aboard Amphibious Assault Ships (AAS). This program will evaluate state-of-the-art lighting fixtures designed to withstand heat. The primary outputs of this effort are heat resistant shipboard deck lighting fixtures for the US Navy. ***FY 2011 Plans:*** Test article contract award 2Q FY 2011. Acquire existing fixture test data 2Q FY 2011. Acquire test item technical data 2Q FY 2011. Evaluate and compare heat resistant fixture performance and compatibility with US Navy shipboard requirements 3Q to 4Q FY 2011. ***FY 2012 Plans:*** Test article delivery scheduled for 1Q FY 2012. Technical and functional lab testing is scheduled for 1Q FY 2012. Environmental and field user testing scheduled for 3Q FY 2012. Final test report and procurement decision are scheduled for 4Q FY 2012	-	0.399	0.439
Title: Landing Craft Air Cushion (LCAC) Operator Suspension Seats (Navy) - Contingent upon congressional appropriation and/or congressional notification	-	1.200	0.299

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Test and field a commercial off-the-shelf marine suspension seat for Landing Craft Air Cushion (LCAC) operators. The purpose of this effort is to lower the risk of lumbar spine injury and long-term disability. This effort will also improve war fighter mission readiness and operator availability on the LCAC in a similar manner as was successfully demonstrated and integrated with the MK-V Special Operations Craft (SOC) program. The marine suspension seat provides operators a safe buffer from the vibrations of the LCAC operational environment. The primary outputs of this project are increased safe operator mission time with respect to human integration standards and a seat model for LCAC 100, the next generation LCAC. ***FY 2011 Plans:*** Test Planning and initial test article procurement 2Q FY 2011. Form and fit verification 3Q FY 2011. Perform at-sea test article function test during 3Q FY 2011. Technical evaluation 4Q FY 2011. ***FY 2012 Plans:*** Field User Evaluation on training craft in 1Q to 2Q FY 2012. Finalize technical test report and provide production recommendation 2Q FY 2012.			
Title: Light Anti-Tank Weapon Rocket Motor Insensitive Munitions (LAW RM IM) Improvement (Navy) ***Description:*** Test a fully Insensitive Munitions (IM) compliant Light Anti-Tank Weapon (LAW) system to increase overall safety and reduce the severe logistical burden associated with storage and transportation of non-IM compliant munitions. The primary outputs are improved safety for system operator/handler; reduced severity of reaction to IM environments; minimized collateral damage caused by accidental rocket motor initiation; and significantly reduce the logistic burden of transporting non-IM compliant munitions. ***FY 2010 Accomplishments:*** Received test articles at the beginning of 1Q FY 2010. Completed Insensitive Munitions (IM) testing and Critical Design Review (CDR) of the container system during 2Q FY 2010. Initiated Weapon System Explosives Safety Review Board (WSESRB) Certification process during 2Q FY 2010. Qualification testing of the container initiated during 3Q FY 2010. Completed qualification testing of the container 4Q FY 2010. ***FY 2011 Plans:*** Propulsion system contract award early 1Q FY 2011. Receive propulsion system test articles by end 2Q FY 2011. Initiate IM and CDR beginning 3Q FY 2011 and complete by end 3Q FY 2011. Initiate qualification testing beginning 3Q FY 2011. ***FY 2012 Plans:***	1.016	0.368	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Complete the Weapon System Explosives Safety Review Board Certification process, procurement decision, final technical report 3Q FY 2012.			
Title: M1A1 Crew Cooling System (Navy) ***Description:*** Test an adequate cooling solution for the entire M1A1 tank crew. The primary outputs are to significantly increase the overall safety of M1A1 crewmembers, resulting in improved mission endurance and operational effectiveness and greatly reduce the logistical burden associated with rotating tank crews due to rapid dehydration. ***FY 2010 Accomplishments:*** Received test articles at the end of 1Q FY 2010. Initiated lab/integration and M1A1 tank operational testing during 2Q FY 2010. Completed lab/integration and M1A1 tank operational testing during 3Q FY 2010. Finalized technical test report and procurement decision at the end of 4Q FY 2010.	0.480	-	-
Title: Marine Grade Aluminum Plate (Navy) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Evaluates an engineered aluminum plate with superior corrosion resistance for use as a repair and replacement material for a ship's superstructure. The Navy has extensive experience with aluminum superstructures on the FFG-7 and CG-47 class ships. A particular concern is an aluminum alloy's susceptibility to sensitization - a microstructural phenomenon that increases corrosion susceptibility, and provides an environment for stress corrosion cracking. The primary output of this project is superior aluminum with multi-layered material that is corrosion resistant in a marine environment. Compared to conventional alloys, this will provide increased survivability, sustainability, and operational readiness compared to current decking and bulkhead plate. ***FY 2011 Plans:*** Procurement of test material in 2Q FY 2011. Long term exposure corrosion testing in 2Q FY 2011. Fabricate test samples 2Q to 3Q FY 2011. Mechanical property testing in 3Q FY 2011. Fatigue and fracture toughness testing during 3Q FY 2011. Aging and aluminum sensitization testing in 3Q FY 2011. Conduct evaluation of weldability during 4Q FY 2011. Adhesion and wear tests in 4Q FY 2011. Evaluate physical properties in 4Q FY 2011. ***FY 2012 Plans:*** Conduct mechanical property testing of welded specimens during 1Q FY 2012. Evaluate effects of paint removal and non-skid removal throughout 1Q to 2Q FY 2012. Continue aging and aluminum sensitization testing between 1Q to 2Q FY 2012. Complete mechanical property, fracture, and fatigue testing in 2Q FY 2012. Continue data acquisition from long term exposure	-	0.331	0.311

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
corrosion testing in 3Q FY 2012. Prepare technical test report and closeout report and make a procurement decision in 4Q FY 2012.			
Title: Maritime EOD Training, Ranging and Evaluation System (METRES) (Navy) ***Description:*** Test an Explosive Ordinance Disposal (EOD)/Mine-Counter-Measures (MCM) Training, Ranging and Evaluation System. The system is capable of detecting and measuring energy signature levels of in-service and future Maritime EOD MCM equipment. It is capable of measuring signatures arising from magnetic, acoustic, seismic, and artificial light activity. Permits EOD/MCM forces to train in a near-real world threat environment. The primary outputs are a programmable influence mine simulation system operated from small craft that is portable and which may be deployed, operated, and recovered from the water without aid of mechanical lifting devices; and a system which will be programmable to support training against new mine threats by allowing new algorithms and threat characteristics to be readily input into the system. ***FY 2010 Accomplishments:*** Issued Request for Proposal 1Q FY 2010. Completed master test plan 4Q FY 2010. Completed post award requirements review 4Q FY 2010. Completed tasking order for fleet evaluation 4Q FY 2010. ***FY 2011 Plans:*** Accept test articles and begin test and evaluation 1Q FY 2011. Complete logistics assessment/supportability review 2Q FY 2011. Procurement decision 3Q FY 2011. ***FY 2012 Plans:*** Exercise production option (second buy of systems to meet Full Operational Capability) 1Q FY 2012.	0.693	-	-
Title: Micro-Smooth Coating System (Navy) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Evaluate commercial micro-smooth coating system as additional protective layers in conjunction with standard topcoats. Micro-smooth coating systems that reduce parasite drag offer the potential to decrease fuel consumption, improve flight characteristics, and extend coating life. A-glaze, a reactive polymer, will be evaluated and results will be compared to commercial products being tested in leverage funding. ***FY 2011 Plans:*** Test article delivery scheduled for 2Q FY 2011. Materials performance lab testing scheduled to begin beginning of 3Q FY 2011. Wind tunnel testing estimated to begin 4Q FY 2011. ***FY 2012 Plans:***	-	0.399	0.439

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Complete materials performance tests 2Q FY 2012. Perform environmental and other surface tests 2Q FY 2012. Finalized technical test report and procurement decision 3Q FY 2010.			
Title: MiniMUTES Hard Disc Drive Upgrade (Air Force) ***Description:*** Tests a replacement Modified Frequency Modulation Bus Hard Disk Drive (HDD), manufactured in France called Datex, for the Mini Multiple Threat Emitter Systems (MiniMUTES) main computer. Replacement of the 20 year old HDD will allow continued pilot threat training using simulated threats such as surface-to-air missiles and anti-aircraft artillery radars. The existing MiniMUTES HDD is obsolete and is no longer repairable or procurable. The primary output is a replacement of the HDD with an up-to-date product. ***FY 2010 Accomplishments:*** Contracted for test article and conduct test planning and training. Initial testing unsatisfactory, project cancelled.	0.003	-	-
Title: Multi-Diver Heating & Cooling System for Wet Submersibles (Special Operations Command) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** This project will validate an existing underwater diver heating and cooling system (DHCS) for Special Operations Forces (SOF) use that maintains a combat diver's core body temperature, regardless of water temperature. The DHCS is based on a miniature vapor compression cycle heat pump that exchanges fluid through high density liquid circulating garments worn by SOF conducting maritime missions. The primary output is a mission enhancing survival system that will be an integral part of the future Shallow Water Combat Submersible for Navy SEALs. Fielding reduction is greater than five years. ***FY 2011 Plans:*** Execute contract for test articles and receive delivery of same. Analyze vendor data and complete test planning. Conduct developmental/technical testing. ***FY 2012 Plans:*** Conduct operational testing and user assessment. Publish all test reports. Submit Foreign Comparative Testing closeout report 4Q FY 2012.	-	0.896	1.041
Title: Multi-fuel Submersible Outboard Engines (Special Operations Command) ***Description:*** Validation testing of a patented Italian air-assisted, direct-injection, fuel delivery system integrated into commercial off-the-shelf, lightweight, submersible outboard engine; to produce non-gasoline burning outboard engine capable of using multiple fuels. The primary output is Compliance with Department of Defense (DoD) Directive 4140.25 Management Policy for	0.530	0.194	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Energy Commodities and Related Services which mandates the conversion of combat systems to common, less combustible fuels by 2010. Fielding reduction is greater than eight years. ***FY 2010 Accomplishments:*** Obtained prototype subsystems and conducted Phase One prototype testing. Completed functional testing on Combat Rubber Raiding Craft (CRRC). Identified initial engine modifications and conducted Phase Two engineering tests on modified engine. ***FY 2011 Plans:*** Initiate Phase Three, which consists of final configuration modification and technical testing on CRRC. Phase IV will be conducted and consists of final developmental and operational testing, followed by production decision 4Q FY 2011.			
Title: Network Application System (Special Operations Command) ***Description:*** This project will be in support of improving network application system's security. Project is classified. Project will be completed by 4Q FY 2011. ***FY 2010 Accomplishments:*** Classified Project - Details are not releasable.	1.675	-	-
Title: Nitrocellulose for Combustible Case Cartridges (Army) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** The objective of this program is to qualify the hammer-mill process for the sheeted nitrocellulose production process at the Radford Army Ammunition Plant to use domestic sheeted cotton linters. ***FY 2011 Plans:*** Upon receipt of FY 2011 funds, the contract will be awarded. Project Manager will receive foreign nitrocellulose and then produce the Combustible Case Cartridges and then perform material question and answers. Ballistic testing at Yuma Proving Ground will begin in 4Q FY 2011. ***FY 2012 Plans:*** Ballistic Testing at Yuma Proving Ground in 2Q FY 2012. Once analysis is completed, a test report/recommendation and technical vvaluation will be produced by 4Q FY 2012.	-	0.749	0.608
Title: Novel Processing System for Ration Meat Items (Army) ***Description:*** Test the Osmofood® system, a simple one-step process which uses inexpensive ground meat to produce shelf stable meat items with desirable texture. The system does not use extremely high temperature like a retort process; hence	0.581	1.166	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
the quality and nutrients are well preserved. Furthermore, the system can be used to incorporate supplemental nutrients (e.g. curcumin, green tea extract) and quality enhancers (e.g. canola protein for meat succulence) to produce a meat roll-up that can be consumed as a savory snack or used as a filling for a shelf stable sandwich. This system could be used for numerous new rations items that up to now not possible. ***FY 2010 Accomplishments:*** Following the production of test items, conducted technical testing at ADIV Clermont-Ferrand, France in 3Q FY 2010. Conducted Microbiological Validation, Accelerated Storage, and Sensory Evaluation at ADIV and NSRDEC in 3Q to 4Q FY 2010. ***FY 2011 Plans:*** Downselect items that meet military ration shelf life requirements, are microbiologically safe, and meet the tastes and preferences of U.S. warfighters. Procure Osmofood pilot line unit and conduct confirmatory testing of selected items. Ship pilot line Osmofood unit to US location in Augusta, GA for US domestic production feasibility testing.			
Title: Photonics Mast Tech Insertion on the Virginia Class Submarine (Navy) ***Description:*** Test an alternative Photonics Mast for the Virginia Class and Ohio Class submarines. The purpose of this effort is to correct a reliability shortfall with the current system that is impacting operational availability. Photonics Mast System provides the imaging, navigation, electronic warfare, and communications function for critical safety of ship and tactical intelligence applications. The current system has significant reliability and maintainability issues. The primary outputs are modular construction of the FCT Photonics Mast that will allow rapid maintenance actions and replacement of functional elements of the sensor at the Intermediate Maintenance Activity vice having to return the sensor to the factory for service; the FCT technology will be upgradeable (Technology Insertion/Refresh): Implementation of high definition color cameras will provide a much improved imagery to the operator and the new system will be more reliable when compared to the legacy Kollmorgen photonics mast. ***FY 2010 Accomplishments:*** Attained approval for shipboard installation and integrations of test article during 2Q FY 2010. Installed and integrated test article during 2Q FY 2010. Perform pier-side systems test and integration, scheduled for 4Q FY 2010. ***FY 2011 Plans:*** Performed at-sea testing for systems evaluation and performance 1Q FY 2011. Finalize technical test report and production decision at the end of 4Q FY 2011.	0.015	-	-
Title: Pilar Gunfire Detection System Upgrades (Special Operations Command) ***Description:*** This project will validate crucial upgrades to fixed site and vehicle mounted gunfire detection systems (GDS). This will provide Special Operations Forces advanced technology to effectively locate and defeat sniper or hostile small arms fire. The	0.648	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
primary outputs are necessary GDS upgrades that include Thermal Image detection, Gun Barrel Navigation integration and Global Positioning System pinpointing. Fielding reduction is greater than three years. ***FY 2010 Accomplishments:*** Conducted engineering evaluation and initial performance testing to identify required engineering change orders. Obtained test articles and completed user assessment at original equipment manufacturer test facility. Conducted user familiarization demonstration. ***FY 2011 Plans:*** Publish test reports. Prepare Foreign Comparative Testing closeout report.			
Title: Precision Sniper Rifle (Foreign and Domestic) (Special Operations Command) ***Description:*** Tests various sniper rifle systems that are more lethal and capable of accurately engaging enemy personnel out to ranges of 1,500 meters. This will provide Special Operations Forces (SOF) Snipers the ability to create more stand-off distance during engagements, which will increase their survivability. This new range will also allow for peak-to-peak engagements on the mountain tops of Afghanistan in the prosecution of Overseas Contingency Operations. The primary output is a complete sniper system with: weapon, noise and flash suppression, ammunition and support articles. This project will capitalize on the availability of recently developed sniper systems that "out-perform" currently fielded SOF sniper systems, and integrate them into the Family of SOF Sniper Rifles Program. Fielding reduction is greater than six years. ***FY 2010 Accomplishments:*** Issued performance specification/request for proposal and received product sample weapons and ammunition. Performed initial go/no go testing of product samples and conducted review of test results and vendor proposals to complete Joint source selection. None of the vendors were able to meet all the necessary criteria for Source Selection; so no selection occurred. Each vendor was given instructions on what is expected and will resubmit their proposals for reconsideration. ***FY 2011 Plans:*** New solicitation will be published in 2Q FY 2011, with contract award expected 4Q FY 2011. Receive test article weapons and ammunition. Perform developmental testing. ***FY 2012 Plans:*** Achieve safety release prior to conducting user assessment testing. Revise Capabilities Production Document and obtain production decision 2Q FY 2012.	1.402	0.769	-
Title: Programmable High Explosive Dual Purpose Ammunition (Special Operations Command)	0.908	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Validation testing of 40 mm high-velocity Programmable-High Explosive Dual Purpose (P-HEDP) rounds for the Advance Lightweight Grenade Launcher (ALGL) MK47 Weapon System. The primary output is P-HEDP ammunition for Special Operations Forces (SOF) use. Fielding reduction is greater than five years. ***FY 2010 Accomplishments:*** Awarded P-HEDP Indefinite Delivery Indefinite Quantity contract. Initiated test article production. Conducted engineering review of vendor test data. Began Weapon System Explosive Safety Review Board and Joint Safety Board review Processes. ***FY 2011 Plans:*** Complete test article manufacturing and take delivery of developmental test articles. Receive operational test articles and conduct operational testing. Obtain safety release and Joint Safety Board approvals. Complete Milestone C Decision package and prepare Foreign Comparative Testing closeout report.			
Title: Pyrolysis Solid Waste Disposal With Energy Recovery (Army) ***Description:*** Test and evaluate a containerized system that uses Pyrolysis Technology to dispose of approximately two tons of solid waste per day within a Force Provider Base Camp. This technology will help reduce or eliminate the need for outside contractors to access the base camp to dispose of solid waste thereby reducing potential threats to the force. Primary outputs: system will be self-powered reducing the need for additional fuel and the energy recovery of the Pyrolysis will reduce the amount of fuel needed to support the base camp, thereby reducing logistics burden. ***FY 2010 Accomplishments:*** Conducted factory acceptance testing prior to delivery to the Government. Conduct operational testing of the system in 1Q FY 2010. Conduct contractor provided system training to the government team at Fort Irwin in 4Q FY 2010. ***FY 2011 Plans:*** Complete final integration of the PWDS Test Unit. Complete development and operation testing and procurement decision documentation by 4Q FY 2011. Procure three systems in FY 2012.	0.893	0.491	-
Title: Rapid Deployment and Extended Autonomy for Single and Multiple UUVs (Navy) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Test an autonomous mission planning plug-in module for the Common Operator Interface for Naval EOD (COIN). The module provides for pre-mission planning and post-mission analysis of missions featuring autonomous behaviors which interfaces directly with COIN. It also will reside on the payload computer on the UUV to provide in-mission dynamic re-planning based on through-sensor environmental feedback and Automated Target Recognition (ATR) capability. This effort is aimed at	-	0.982	1.081

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
enhancing the capability of fleet assets by permitting a shift from pre-scripted vehicle paths to the use of autonomy to define and attain higher-level mission objectives more efficiently. ***FY 2011 Plans:*** Award delivery order for autonomous mission planning plug-in module in 2Q FY 2011. Perform integration, analysis, and study of prototype module seats during 4Q FY 2011. Combine demonstration results with simulation results to verify the fidelity of the simulation to demonstrate the essential aspects of the autonomy and to show system robustness to many situations during 4Q FY 2011. ***FY 2012 Plans:*** Finalize autonomous mission planning module and associated documentation during 1Q FY 2012. Integrate autonomous mission planning module onto EOD prototype vehicles with internal payload computers in 2Q FY 2012. Perform user evaluations in 3Q FY 2012. Publish test reports in 4Q FY 2012. Perform final module review in 4Q FY 2012. Publish decision packet with procurement recommendations and closeout report during 4Q FY 2012.			
Title: RapidEye Imagery for Eagle Vision (Air Force) ***Description:*** Test software for integration of RapidEye into EagleVision. RapidEye is a constellation of five Earth remote-sensing satellites intended for broad-area multispectral optical imaging, with the capability to image areas of interest multiple times per day. The five-satellite constellation redundancy enhances its availability and survivability and eliminates single-point-of-failure risk unique to single spacecraft. The primary output is the integration of the RapidEye satellite constellation ground station interface into one of five Eagle Vision Data Acquisition Segment (DAS) sites; and following a successful FCT evaluation of this initial integration, the program would subsequently integrate the same ground station interface into the four remaining Eagle Vision sites. ***FY 2010 Accomplishments:*** Contracted for the test article. ***FY 2011 Plans:*** Initiate technical and safety testing efforts 1Q FY 2011. Initiate field user evaluation and complete technical and safety testing 2Q FY 2011. Receive Test article 3Q FY 2011. Finalize technical report by end of 3Q FY 2011. Finalize production decision early 4Q FY 2011.	2.300	-	-
Title: Reconnaissance Airborne Pod TORnado (RAPTOR) Precision Targeting (PT) (Navy) - Contingent upon congressional appropriation and/or congressional notification	-	1.498	1.379

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Provide the Distributed Common Ground System – Navy (DCGS-N) and Marine Corps (DCGS-MC) with a capability to receive in near real-time, via Common Data Link (CDL) antenna systems, Intelligence, Surveillance, and Reconnaissance (ISR) data from the Reconnaissance Airborne Pod for Tornado (RAPTOR) Systems that are carried by Royal Air Force (RAF) GR-4 platforms. The primary outputs of the RAPTOR System are Electro-Optical (EO) and Infrared (IR) images in a digital format. Software modifications to the ISR Processing, Exploitation, and Dissemination (PED) Systems currently used by DCGS-N will be implemented and tested to verify that ISR data from RAPTOR Systems can be rapidly received, screened for potential mission application, and exploited to produce targeting data that can be used by US weapon systems. This capability will allow US forces to leverage coalition ISR assets and reduce mission requirements for US ISR platforms. ***FY 2011 Plans:*** Award contracts to vendors 2Q FY 2011. Investigate ASTOR processing and exploitation capabilities and begin software transfer and development on US DCGS components 3Q FY 2011. Coordinate plans for flight testing and evaluation through 1Q FY 2012. ***FY 2012 Plans:*** Coordinate plans for flight testing and evaluation 1Q FY 2012. Validation analysis 3Q FY 2012.			
Title: Rifle Accessory Control Unit (RACU) (Navy) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Tests the RACU, a one-handed, on the move, intuitive, programmable device that will enable a Marine to operate all rifle accessories and communications equipment through a central control point. Its five-button, silent, shock/vibration resistant, and water proof digital controller that attaches to the front of any rifle via a MIL-STD 1913 or STANAG 4694 NATO Accessory Rial. A computer program also helps guide a first time operator with simple symbology, triggering muscle memory and promoting eyes-free operation. RACU is capable of intelligently controlling all the sensors optics, flashlights, and radios while simultaneously allowing for changes in thermal views, two-way communications, and turning power on and off to individual devices when not in use. ***FY 2011 Plans:*** Contract preparation/award and test planning estimated by the end of 2Q FY 2011. Complete fabrication of test articles during 3Q FY 2011. Receive test articles and initiate performance, environmental/shock testing during 4Q FY 2011. ***FY 2012 Plans:*** Complete performance and environmental/shock testing and initiate field user evaluation during 1Q FY 2012. Complete field user evaluation by end of 2Q FY 2012. Finalize technical report and procurement decision during 3Q FY 2012.	-	0.736	-
Title: Robotic – Moving Target System (R-MTS) (Navy)	2.233	0.614	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Test a free roaming, pre-programmable mobile target system that simulates realistic human movements and responses in an urban combat environment. The primary outputs are improved marksmanship skills, tactical decision making proficiency, and analytical abilities that will result in the combat efficacy of engaging moving life-like targets with live-fire and maneuver. ***FY 2010 Accomplishments:*** Test article contract awarded and initiated fabrication of test articles at the end of 3Q FY 2010. Received test articles at the end of 4Q FY 2010. ***FY 2011 Plans:*** Complete test planning and initiate technical and safety testing efforts 1Q FY 2011. Initiate field user evaluation and complete technical and safety testing 2Q FY 2010. Finalize technical report by end of 3Q FY 2010. Finalize production decision early 4Q FY 2011.			
Title: Signaling Colored Smoke Grenades (SCSG) (Navy) ***Description:*** Test a family of signaling colored smoke grenades for procurement and immediate fielding to the Warfighter. SCSG is a joint-project with the Army, and the United States Marine Corps is the lead. The primary outputs are readily producible and cost efficient Green/Yellow/Red/Violet/White colored smoke grenades to meet operational requirements for ground-to-air and ground-to-ground signaling and improvements for increased smoke duration, safer initiation system by reducing flame height, decreased smoke toxicity, more environmentally friendly components, reduced weight, Insensitive Munitions compliance, and denser smoke to enhance visual recognition from long distances. ***FY 2010 Accomplishments:*** Completed Phase I down-selection at the end of 3Q FY 2010. Completed Phase II contract award during 4Q FY 2010. ***FY 2011 Plans:*** Receive Phase II test articles by the end of 1Q FY 2011. Complete insensitive munitions / technical / safety / environmental / toxic testing during 3Q FY 2011. Initiate Weapon System Explosives Safety Review Board/Naval Ordnance Safety and Security Activity Certification process by the end of 1Q FY 2011 and anticipate completion during 4Q FY 2011. Finalize technical test report and production decision by the end of 4Q FY 2011.	0.783	-	-
Title: SOF Close Target Reconnaissance Systems (Special Operations Command) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** This project will test and evaluate several evolutionary systems that capture and transfer near-real-time actionable intelligence information with instant data exfiltration, to monitor potential foreign hostile threat activities. The primary output is to	-	2.111	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
covertly employ close-target audio, video and optical reconnaissance systems for Special Operations Forces (SOF) use. Fielding reduction is greater than five years. ***FY 2011 Plans:*** Execute contract for test articles and receive delivery of same. Analyze vendor data and complete test planning. Conduct technical and safety testing, and perform operator/user assessment testing. ***FY 2012 Plans:*** Publish all test reports. Prepare production decision packet and obtain milestone decision. Submit Foreign Comparative Testing closeout report 1Q FY 2012.			
Title: Stand Off Gas Cloud Detector for Chemical Weapons (Special Operations Command) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Test a remote stand-off gas detector that uses a thermal camera to conduct a spectral analysis in order to detect identify, classify, and visualize chemical hazards, such as Chemical Warfare Agents and Toxic Industrial Chemicals. The primary output is a Stand Off Chemical Gas Cloud Detector for use by Special Mission Units. Fielding reduction is greater than five years. ***FY 2011 Plans:*** Execute contract for test articles and receive delivery of same. Analyze vendor data and complete test planning. Obtain safety release and conduct initial technical testing. ***FY 2012 Plans:*** Conduct combined developmental and operational testing. Publish all test reports. Prepare production decision packet and obtain milestone decision. Submit Foreign Comparative Testing closeout report 3Q FY 2012.	-	1.250	0.702
Title: Sub Caliber Training System for MAAWS (Special Operations Command) ***Description:*** Comparative evaluation of sub-caliber training systems for the Carl Gustaf 84mm weapon system. The primary outputs are sub-caliber training rounds inserted into an 84mm ammunition adapter that will provide realistic, cost efficient weapons training, saving expensive 84mm ammunition for mission application. ***FY 2010 Accomplishments:*** Conducted source selection. Re-competition to allow for non caliber specific training systems consideration delayed project 9 months. Awarded test article contract. Continued test planning. Initiated test article hardware production and integration. ***FY 2011 Plans:***	1.459	0.851	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Accept delivery of training system test articles. Obtain safety release and type classify for limited production units. Conduct government testing to include first article testing, combined developmental and operational testing. ***FY 2012 Plans:*** Conduct limited user testing in 1Q FY 2012. Publish all test reports. Complete Joint Service Weapons Safety Review process. Obtain production decision and fielding and deployment release in 2Q FY 2012. Submit Foreign Comparative Testing closeout report 1Q FY 2013.			
Title: Submarine Survivor Locating Device (Navy) ***Description:*** Test an automatic location device utilizing Very High Frequency (VHF) radio technology integrated with the Global Positioning Satellite System. It will enable Navy rescue operations to home directly on submarine escape survivors in the open ocean. The primary output is successful location of distressed submariners on the ocean's surface vice the current technology which only identifies the coordinates of the distressed submarine. ***FY 2010 Accomplishments:*** Contracted for test articles 3Q FY 2010. Received ten V200 test articles from MobilArm Limited. Delivered five V200 test articles to Naval Service Warfare Center (NSWC) Panama City for pressure-proof and off-gas testing 4Q FY 2010. Completed initial submarine qualification testing and received approval for use onboard all in-service submarines. Validated vendor provided battery service life and material composition data initiated. At sea testing in conjunction with USCG off coast of Tampa Bay, FL 4Q FY 2010. ***FY 2011 Plans:*** At-sea signal acquisition testing scheduled for 2Q FY 2011. Conduct additional signal acquisition testing in more severe sea state conditions. Perform final operator assessments and testing 3Q FY 2011. Conduct quality audits and make procurement decision 4Q FY 2011.	0.437	0.562	-
Title: Sustainable Water Extraction System (Special Operations Command) - Contingent upon congressional appropriation and/or congressional notification ***Description:*** Qualifies a sustainable water extraction system for Special Forces civil affairs units to provide potable water in remote and austere environments. A system that combines the power of sun and wind for unattended operation, manufactured by Grundos in Denmark will be tested in United States Southern Command (USSOUTHCOM) and United States Central Command (CENTCOM) area of operations. ***FY 2011 Plans:***	-	0.614	0.676

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
After receiving the initial FY 2011 funds, the contract will be awarded. The PM will then deliver test articles to SOUTHCOM for operational initial phase one testing. ***FY 2012 Plans:*** If phase one testing successful, additional test articles will be sent to CENTCOM test village for operational testing. Complete test report and close out reports with recommendations on procurement.			
Title: Ultra High Energy Rechargeable Battery (Army) ***Description:*** Test a new rechargeable BB-2590/U battery. It consists of lithium-ion cells and replaces a battery used in many US Army portable radios and electronics equipment and is the most widely used battery in the Army inventory. Compared to the current production battery, the new BB-2590/U battery will have one hour (30 percent) greater service time, 1.6 Ah (24 percent) greater capacity, and 38 Watt-hours (20 percent) greater energy. At -32 °C and five amperes, the new battery will provide 1.3 hours service time and 165 Watt-hours energy; whereas, the current production battery will not operate at -32 °C. The battery weight will be reduced by 71 grams per battery. Less weight, greater run time, equals fewer batteries required for missions. ***FY 2010 Accomplishments:*** Awarded the purchase contracts for test article cells and batteries. Tested batteries passed the altitude environmental test and the thermal shock environmental test during 4Q FY 2010. ***FY 2011 Plans:*** Evaluations will continue through FY 2011. Upon completion of successful testing, Defense Logistics Agency will incorporate the new BB-2590/U battery as a replacement for the currently used BB-2590/U battery. Acquisition 1Q FY 2012.	0.592	0.487	-
Title: Unmanned Systems Communications Interoperability (USCI) (Navy) ***Description:*** Test a system for allowing independently developed unmanned vehicles and control systems to exchange information in a multi-domain, multi-vendor environment. This project will test a universal data translator to substantially reduce the time, cost and risk to integrate, test, and evaluate multi-system combinations using both new and existing equipment from any vendor. The primary output is system integration using a product rather than a service, allowing more systems to share information and command and control in an interoperable environment. ***FY 2010 Accomplishments:*** Outlined project plan and defined test scenarios during 2Q FY 2010. Completed initial integration and test plan development during 3Q FY 2010. ***FY 2011 Plans:***	1.012	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Conduct test for unmanned ground vehicles 1Q FY 2011. Conduct test for combined unmanned ground and maritime vehicles 1Q to 2Q FY 2011. Performance evaluation and technical test report to be completed by end of 2Q FY 2011.			
Title: United States Marine Corps (USMC) M1A1 Laser Warning System (LWS) (Navy) ***Description:*** Test a real time laser warning system for the M1A1 tank. The primary outputs are detect and characterize laser threats under all weather and battlefield conditions; provide 360 degree azimuth coverage and gives the tank crew the angle of arrival within +/- 1 degree; and increased survivability and save lives. ***FY 2010 Accomplishments:*** Contract awarded during 3Q FY 2010. Completed delivery of test articles at the end of 4Q FY 2010. ***FY 2011 Plans:*** Complete fabrication of test articles during 3Q FY 2011. Receive test articles and initiate technical/integration testing beginning 4Q FY 2011. ***FY 2012 Plans:*** Complete technical/integration testing and initiate field user evaluation at the end of 1Q FY 2012. Complete field user evaluation, final technical report, and procurement decision during 3Q FY 2012.	0.670	0.798	-
Title: FCT FY 2012 Plans ***Description:*** Investment decisions are made during the execution years in response to service/United States Special Operations Command (USSOCOM) and Other Government Organizations' (OGO) requirements and as new threats emerge or new opportunities are presented. In FY 2012, the FCT will invest in service/USSOCOM/OGO projects that will focus in the following operational areas such as: Forward Operating Base Protection; Hostile Fire/Air Crew Protection (small arms fire and man-portable air-defense systems); Cyber Defense; Autonomous and Portable Air, Ground and Underwater Systems; Enhanced Soldier Protection; Improved Power Sources; Improved Logistics and Equipment Reset; and any other focus areas that benefit the warfighter. ***FY 2012 Plans:*** Initiate new start projects and support ongoing projects.	-	-	6.505
Accomplishments/Planned Programs Subtotals	33.155	32.755	19.080

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605130D8Z: *Foreign Comparative Testing*	PROJECT P130: *FCT*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Since the program's inception in 1980, Office of Secretary of Defense (OSD) has initiated 630 projects; 551 projects have been completed to date. Of the 266 evaluations that met the sponsors' requirements, 218 led to procurements worth approximately $10.400 billion in FY 2010 constant year dollars. With an OSD investment of about $1.170 billion, the FCT program has realized an estimated RDT&E cost avoidance of $7.800 billion in FY 2010 constant year dollars. In FY 2010 FCT had a transition rate of 93 percent for completed projects, exceeding the objective of 30 percent for demonstration programs (Strategic Objective 4-3, Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD (AT&L)).

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605142D8Z: *Systems Engineering*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	29.824	41.884	-	41.884	45.188	44.479	48.184	50.313	Continuing	Continuing
P142: *Systems Engineering*	-	24.939	37.130	-	37.130	40.218	39.140	42.402	43.773	Continuing	Continuing
P143: *Program Protection*	-	4.885	4.754	-	4.754	4.970	5.339	5.782	6.540	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) establishes the dedicated funding line to carry out the duties, as described in Title 10 US Code, Section 139, the Weapons Systems Acquisition Reform Act of 2009. The Director, Systems Engineering (DSE) is the principal advisor to the Secretary of Defense, the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) and the Director, Defense Research and Engineering (DDR&E) on systems engineering, development planning, and related technical fields in the Department of Defense. The DSE develops policies and guidance for (1) the use of systems engineering principles and best practices; (2) the use of systems and software engineering planning and contracting approaches to enhance reliability, availability, and maintainability on major defense acquisition programs (MDAPs); (3) the systems engineering plans (SEPs) for MDAPs including software, and systems engineering considerations in support of lifecycle management and sustainability; and (4) the inclusion of provisions relating to systems engineering and reliability in requests for proposals. The DSE reviews and approves the SEP for each MDAP and monitors and reviews the systems engineering and development planning activities of MDAPs and other defense acquisition programs as directed by the Secretary of Defense or the USD(AT&L). Based on the Director's continuous program engagement, the DSE advises and makes recommendations to the Secretary of Defense and the USD(AT&L) regarding systems engineering, development planning and the execution of these activities. As a member of the Defense Acquisition Board, the DSE provides independent assessments of defense acquisition program's systems engineering, development planning, technical execution, and risk. The DSE also provides input on the inclusion of systems engineering requirements as part of the Joint Requirements Oversight Council's process for joint military requirements, to include developing specific inputs relating to each capabilities development document.

The DSE issues guidance to, and consults with, the Services and Agencies with respect to systems engineering in the Department and provides advocacy, oversight, and guidance to elements of the acquisition workforce responsible for systems engineering, development planning, and lifecycle management and sustainability functions and developing policies and guidance for the integration of specialty engineering functions. The DSE integrates systems engineering with Mission Assurance in the acquisition system. The DSE periodically reviews the organizations and capabilities of the military departments with respect to systems engineering, development planning, and lifecycle management and sustainability, and identifies needed changes or improvements to such organizations and capabilities.

The DSE prepares and submits an annual report to Congress on systems engineering activities and effectiveness.

This PE includes effort by the office of the DSE in implementing the Department's Cyber initiatives. Specifically, the PE will develop and address the critical subdiscipline of systems engineering - system security engineering and Program Protection. This includes study and maturation of discipline fundamentals such as best practices, tools, guidance and policy, and will also pilot system security practices in defense acquisition as a fundamental element of systems engineering and technical reviews. Efforts in this area are directly driven by cyber and malicious supply chain threats that the Department faces, and therefore, will include implementing Department directives and regulations to protect critical program information.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605142D8Z: *Systems Engineering*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	29.824	26.983	-	26.983
Current President's Budget	-	29.824	41.884	-	41.884
Total Adjustments	-	-	14.901	-	14.901
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Baseline Review	-	-	18.900	-	18.900
• Defense Efficiency – Baseline Review	-	-	-0.413	-	-0.413
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-1.152	-	-1.152
• Defense Efficiency – Civilian Staffing Reduction	-	-	-1.200	-	-1.200
• Defense Efficiency – Contractor Staff Support	-	-	-1.169	-	-1.169
• Economic Assumptions	-	-	-0.065	-	-0.065

Change Summary Explanation

Baseline Review: The Under Secretary of Defense (Acquisition, Technology & Logistics) initiated implementation of the Weapons Systems Acquisition Reform Act (WSARA) by establishing a new office of the Director, Systems Engineering and reallocating resources from the former Office of the Director, Systems and Software Engineering, which resided in PEs 0604875D8Z and PE 0605804D8Z. The FY12 adjustment supports this decision.

In FY 2011, identified funding from 0605804D8Z, was re-allocated to this Systems Engineering Program Element. The Base Year funding amount also includes a WSARA adjustment.

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605142D8Z: *Systems Engineering*

Defense Efficiency – Civilian Staffing Reduction. As part of the Department of Defense reform agenda, eliminates civilian full-time equivalent positions to maintain, with limited exceptions, civilian staffing at the FY 2010 level.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605142D8Z: *Systems Engineering*	PROJECT P142: *Systems Engineering*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P142: *Systems Engineering*	-	24.939	37.130	-	37.130	40.218	39.140	42.402	43.773	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This (P142) program supports the execution of the missions of the Director, Systems Engineering (DSE) to: (1) provide flexible engineering policy, guidance, and workforce development requirements for the DoD acquisition workforce; (2) foster an acquisition environment of collaboration, teamwork, and joint ownership of program success through a proactive program oversight process, ensuring appropriate levels of systems engineering discipline are applied through all phases of the acquisition life cycle; and (3) engage all stakeholders across government, industry, and academia to collectively advance systems engineering practice and achieve acquisition excellence. The outcome of this effort is to ensure systems engineering principles and disciplines are fully accepted and assimilated into the DoD acquisition workforce positioning the DoD for acquisition excellence leading to a stronger national defense.

Activities include the following--

Program Support Functions:
- Working with program managers to prepare systems engineering plans (SEPs) to document the technical management approach.
- Conduct periodic visits in support of technical reviews to confirm programs are executed in accordance with the SEP.
- Review all aspects of the systems engineering process for major defense acquisition programs to ensure they are adequate to support fielding and the achievement of cost and performance goals including reliability, sustainment and other mission assurance considerations.
- Participate in Systems Engineering Integrated Project Teams (IPTs), Systems Engineering Working Integrated Project Teams (WIPTs) and Systems Engineering technical reviews, especially Preliminary Design Reviews and Critical Design Reviews.
- Work with DoD Service program managers, their staffs, and other organizations, technical authorities, and oversight organizations to develop and implement technical management programs for major defense acquisition program (MDAPS).
- Conceive plans and lead program support reviews and assessments of MDAP weapons systems and other programs (e.g., Major Automated Information Systems) to shape technical planning and management to ensure program success.
- Conduct other technical reviews as requested e.g. Nunn-McCurdy certification reviews, Non-Advocate Reviews, focused technical assessments and software readiness reviews to identify and mitigate program risk.

Mission Assurance Functions:
- Establish Mission Assurance policy, guidance and workforce development to drive the development of fully capable and supportable weapons systems.
- Oversee Component implementation of Mission Assurance initiatives and conduct independent Mission Assurance assessments.
- Develop education and training materials for instructing, maintaining and enhancing the defense acquisition workforce. Activities include developing guidance to enhance Systems Planning, Research, Development and Engineering (SPRDE) and Production Quality and Manufacturing (PQM) acquisition career planning

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605142D8Z: *Systems Engineering*	PROJECT P142: *Systems Engineering*

and progression, monitoring and facilitating Defense Acquisition University (DAU) updates systems engineering, quality and software engineering course to ensure curriculum represents the education and training requirements necessary to be a viable team member in the acquisition process.
- Drive an overall improvement in weapon system reliability through improved reliability engineering, reliability growth management, and reliability monitoring in program development contracting, execution and sustainment.
- Prepare and submit annual reports to Congress on the Department's capabilities and effectiveness in systems engineering and development planning.

System Analysis Functions:
- Execute the acquisition system elements of the National Cyber Security Strategy including cyber security, systems security and program protection planning.
-Guide Service and other component organizations in the development planning process to ensure proposed MDAP programs are executable within acceptable levels of risk.
- Resolve long-term major SE challenges such as systems of systems (SoS) systems engineering, SE Complexity Analysis and systems engineering based technical trade off analysis and pre-program formulation stages.
- Provide necessary modeling and simulation policy and guidance, clarify the application of distributed simulation standards and work with the DoD modeling and simulation community to identify and prioritize required capabilities and competencies needed to support acquisition modeling and simulations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Systems Engineering Initiatives	-	24.939	37.130
Description: The Director, Systems Engineering (DSE) provides objective assessments of program risk to support knowledge-based decision making by Department of Defense (DoD) leaders regarding DoD Major Defense Acquisition Programs (MDAPs) and Major Automated Information Systems (MAIS). ***FY 2011 Plans:*** Strategic Thrust: Major Program Support •Deep-dive systems engineering reviews of Major Acquisition Defense Acquisition Programs (MDAPs) and special interest programs. •Expand conduct of SE and execution risk assessments. •Initiate systems integration and development planning risk assessments. •Expand monitoring programs, providing systems engineering oversight to include all MDAPs, MAIS and special interest programs. •Conduct systemic analysis and process management. •Expand root cause analysis conducted during and after Program Support Reviews (PSRs). •Initiate detailed performance measurements and analysis. •Participate in Overarching Integrated Product Teams (OIPTs) providing decision-quality information and recommendations to Defense Acquisition Boards (DABs), In-Process Reviews (IPRs), Defense Space Acquisition Boards (DSABs) and Information Technology Acquisition Boards (ITABs).			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605142D8Z: *Systems Engineering*	PROJECT P142: *Systems Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
•Review MDAP Request for Proposals for critical reliability requirements. Strategic Thrust: Department Systems Engineering Capabilities Assessment •Conduct analysis of Military Departments self-assessments; conduct analysis of DoD's systems engineering capability. •Author annual Congressional Report jointly with Development Test and Evaluation (DT&E). •Work jointly with DT&E to develop and track new measurable performance criteria. •Develop and strengthen component SE organization and capabilities. Strategic Thrust: Policy and Guidance •Develop and update core SE policy, guidance and standards; review all acquisition policy for SE implications. •Develop and update software engineering policy, guidance and standards. •Direct support and oversight to software intensive programs. •Develop and author specialty engineering policy, guidance and standards. •Workforce development: Functional Lead for System Planning, Research, Development and Engineering (SPRDE), Production, Quality, and Manufacturing (PQM) and assist software engineering. •Provide SE guidance to DoD earned value management (EVM). •Foster early integration of systems safety, reliability, maintainability and life cycle sustainment into pre-MDAPs, MDAPs and pre-material development decision (MDD) activities. Strategic Thrust: Early Systems Engineering and Development Planning •Develop policy and guidance for development planning and early systems engineering; oversee its establishment within Services. •Perform early acquisition risk assessment including pre-Milestone A engagement with Joint Requirements Oversight Council processes. •Support Services and Combatant Command (COCOMs) in pre-milestone (MS) A formulation. •Support requirements analyses and analysis of alternatives. •Support initial capabilities document definition and development. •Oversee and execute modeling, simulation and analysis for DoD. •Enhance modeling and simulation (M&S) support to analysis of alternatives. •Lead SE research, systems of systems research and collaboration across Services to identify areas of improvement; develop and establish best practices. •Oversee SE Research University Affiliated Research Center (UARC) and conduct studies and analysis. ***FY 2012 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605142D8Z: *Systems Engineering*	PROJECT P142: *Systems Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Continuation of FY 2011 Plans.			
Accomplishments/Planned Programs Subtotals	-	24.939	37.130

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable.

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605142D8Z: *Systems Engineering*	PROJECT P143: *Program Protection*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P143: *Program Protection*	-	4.885	4.754	-	4.754	4.970	5.339	5.782	6.540	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) must address cyber security and supply chain risks to DoD networks, weapons systems and information stored and processed on both DoD and Defense Industrial Base (DIB) unclassified networks that support DoD programs. Increased reliance on the internet as a vehicle for sharing information, globalization of the supply chain, and advanced persistent threats (APTs) that can evade commercially available security tools and defeat generic security best practices, drive the need for better and smarter program protection planning and execution. The President's Cyber Initiative has moved to counter these threats and mitigate the risks. The Acquisition Cyber Security Initiative links high level policies and practical expertise to specific acquisition practices, systems engineering activities, and risk reduction activities. Through this initiative the Department will pilot activities with the DIB to reduce risks in sharing and storing critical program information, better understand and mitigate supply chain risks, improve program protection planning, and improve and streamline program protection engineering. The Department has developed a Trusted Systems strategy which integrates Protection Planning for the development of capabilities, the use of proven mitigation techniques and tools, and the ongoing refinement of risk management processes, and creation of needed technology.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Program Protection	-	4.885	4.754
FY 2011 Plans: - Publish Program Protection Plan Guidebook. Implement Program Protection Plan procedures with programs on an ongoing engagement basis with verification as they approach major milestone reviews. Conduct support reviews for up to 15 Major Defense Acquisition Programs (MDAPs) and develop guidance for criticality analysis with Services to augment current research technology protection focused activity with procedures to ensure protection of critical components. -Develop acquisition guidance for supply chain risk management, incorporating lessons learned from vulnerability assessments conducted. Support programs in effective implementation of needed supply chain risk management. Assess sustainment issues for protection of critical components and program information. - Collaborate in the development of the Defense Acquisition Regulations System (DFARS) and Federal Acquisition Regulation (FAR) language to implement information security on DoD contracts for protection of defense program information to include Prime and subcontractors. Develop and implement process for adjudicating public comments. Provide acquisition support to DIB Cyber Security program.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605142D8Z: *Systems Engineering*	PROJECT P143: *Program Protection*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Oversee and manage the acquisition security database, track implementation by the components. Develop horizontal protection requirements. Develop a strategy for oversight and implementation of horizontal protection. ***FY 2012 Plans:*** - Provide support to Acquisition Category (ACAT) I programs to conduct broad program protection planning. Conduct criticality analyses. Develop Program Protection Plans, and track progress to verify protection of critical program capabilities. Review ACAT I Program Protection Plans and provide recommendations for their approval to USD(AT&L). - Conduct outreach to further the implementation and understanding of system security engineering requirements and practices (courseware, guidance dissemination, mentoring of Service teams, training, and outreach). - Collaborate in developing DFARS or FAR language to implement information security on DoD contracts for protection of defense program information. Develop and implement process for adjudicating public comments. Provide acquisition support to Defense Industrial Base (DIB) Cyber Security (CS) program. - Oversee and manage the acquisition security database and track implementation by the components. Implement horizontal protection adjudication process. Evolve the Horizontal Protection processes to meet changing threats.			
Accomplishments/Planned Programs Subtotals	-	4.885	4.754

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	5.564	6.264	4.261	-	4.261	4.961	5.028	5.095	5.146	Continuing	Continuing
P161: *Nuclear Matters*	5.564	6.264	4.261	-	4.261	4.961	5.028	5.095	5.146	Continuing	Continuing

A. Mission Description and Budget Item Justification

The purpose of the Nuclear Matters program is to sustain the U.S. nuclear deterrent posture; counter nuclear threats, and to develop nuclear and conventional physical security equipment. The funds for this program are used to support research, development, test and evaluation efforts as well as studies and analysis for nuclear weapons security; use control; nuclear weapons stockpile safety, survivability and performance; countering nuclear threats and office management. Funds are also used to develop and implement plans for stockpile transformation; infrastructure analysis and assessments; DoD-NNSA Nuclear Weapons Council activities, as mandated by Title 10 USC, section 179; radiological and nuclear emergency response efforts; and management of international programs of nuclear cooperation, particularly with respect to enhancing international nuclear safety and security and office management. The Nuclear Matters program is also responsible for policy development and implementation, and operations and oversight of the Personnel Reliability Program, nuclear and conventional physical security equipment, and for the protection of nuclear and non-nuclear weapons systems, DoD personnel and facilities.

Ensure sufficient funding is available for travel to support the requirements of this program element.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	6.422	6.264	6.360	-	6.360
Current President's Budget	5.564	6.264	4.261	-	4.261
Total Adjustments	-0.858	-	-2.099	-	-2.099
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-0.858	-	-1.699	-	-1.699
• Defense Efficiency - Contractor Staff Support	-	-	-0.234	-	-0.234
• Defense Efficiency - Report, Studies, Boards, and Commissions	-	-	-0.117	-	-0.117
• Defense Efficiency - Baseline Review	-	-	-0.042	-	-0.042
• Economic Assumptions	-	-	-0.007	-	-0.007

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters*

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters*	PROJECT P161: *Nuclear Matters*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P161: *Nuclear Matters*	5.564	6.264	4.261	-	4.261	4.961	5.028	5.095	5.146	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The purpose of the Nuclear Matters program is to sustain the U.S. nuclear deterrent posture; counter nuclear threats, and to develop nuclear and conventional physical security equipment. The funds for this program are used to support research, development, test and evaluation efforts as well as studies and analyses for nuclear weapons security; use control; nuclear weapons stockpile safety, survivability and performance; countering nuclear threats and office management. Funds are also used to develop and implement plans for stockpile transformation; infrastructure analyses and assessments; DoD-NNSA Nuclear Weapons Council activities, as mandated by Title 10 USC, section 179; radiological and nuclear emergency response efforts; and management of international programs of nuclear cooperation, particularly with respect to enhancing international nuclear safety and security and office management. The Nuclear Matters program is also responsible for policy development and implementation, and operations and oversight of the Personnel Reliability Program, nuclear and conventional physical security equipment, and for the protection of nuclear and non-nuclear weapons systems, DoD personnel and facilities.

Ensure sufficient funding is available for travel to support the requirements of this program element.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Nuclear Weapons Council (NWC) and Committee of Principals (CoP)	0.910	1.278	0.683
Description: The Nuclear Weapons Council (NWC) is a joint Department of Defense (DoD) and Department of Energy (DOE)/ National Nuclear Security Administration (NNSA) organization established by Congress to facilitate cooperation and coordination between the two Departments as they fulfill their dual agency responsibilities for U.S. nuclear weapons stockpile management.			
FY 2010 Accomplishments: - Facilitated nuclear weapons complex site visits for individuals within the nuclear weapons community, including senior DoD/DOE officials. - Prepared, staffed, and submitted annual reports to the President and the Congress to include the FY 2010-2016 Nuclear Weapons Stockpile Memorandum and Requirements Planning Document, FY 2009 Report on Stockpile Assessment, FY 2009 Joint Surety Report and the FY 2009 NWC Report to Congress. - Managed the activities on the Congressionally mandated Joint DoD-DOE Nuclear Weapons Council and its support committees to include the Nuclear Weapons Council Standing and Safety Committee, the Compartmented Advisory Committee and the Action Officer group.			
FY 2011 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters*	PROJECT P161: *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continue to manage the activities on the Congressionally mandated Joint DoD-DOE Nuclear Weapons Council and its support committees to include the Nuclear Weapons Council Standing and Safety Committee, the Compartmented Advisory Committee and the Action Officer group ***FY 2012 Plans:*** - Continue to manage the activities on the Congressionally mandated Joint DoD-DOE Nuclear Weapons Council and its support committees to include the Nuclear Weapons Council Standing and Safety Committee, the Compartmented Advisory Committee and the Action Officer group			
Title: International Programs ***Description:*** The United States also participates in several international programs of cooperation regarding nuclear weapons with foreign governments and regional defense organizations that involve unclassified and classified information exchanges. In general, these agreements are designed to promote safety and security, advance stockpile stewardship and collaborate in counter-proliferation efforts. ***FY 2010 Accomplishments:*** - Supported the Joint Steering Group Chairman and Joint Coordinating Group Membership for the Warhead Safety and Security Exchange Program - Conducted exchanges with the United Kingdom Ministry of Defense and atomic weapons complex organizations to support U.S. policy objectives - Supported the unclassified nuclear weapons related exchanges in support U.S. policy objectives in the NATO-Russia Council - Advised and supported the Nuclear Matters office review, analyze, advise and execute nuclear weapons related international treaties ***FY 2011 Plans:*** - Build upon FY 2010 initiatives. - Execute confidence building programs of cooperation with international partners. - Sponsor international partners at national-level nuclear weapons accident/incident exercises. ***FY 2012 Plans:*** - Execute confidence building programs of cooperation with international partners. - Sponsor international partners at national-level nuclear weapons accident/incident exercises.	0.390	0.451	0.320
Title: Nuclear Surety	0.910	0.959	0.683

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters*	PROJECT P161: *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Because of their political and military importance, destructive power, and the potential consequences of an accident or unauthorized act, nuclear weapons and nuclear weapon systems require special consideration and must be protected against risks and threats inherent in their peacetime and wartime environments. Oversight of the Department of Defense (DoD) nuclear surety program is provided by DATSD(NM). ***FY 2010 Accomplishments:*** - Oversaw the implementation of recommendations various boards, commissions, and panels regarding nuclear surety. - Completed the development of the physical security risk management tool. - Conducted OSD oversight and provide direction for actions taken under DoDD 4540.5, "Transportation of Nuclear Weapons"; DoDD S-5210.81, "United States Nuclear Weapons Command and Control, Safety, and Security"; DoDD S-3150.7, "Controlling the Use of Nuclear Weapons";; DoDD 5210.42 and 5210.42-R, "The DoD Personnel Reliability Program'; and DoDD 5210-.41 and S-5210.41-M, "Physical Security of Nuclear Weapons." - Supported activities that support nuclear surety policy and provide OSD oversight of the Nuclear Surety program. ***FY 2011 Plans:*** - Conduct OSD oversight and provide direction for actions taken under DoDD 4540.5, "Transportation of Nuclear Weapons"; DoDD S-5210.81, "United States Nuclear Weapons Command and Control, Safety, and Security"; DoDD S-3150.7, "Controlling the Use of Nuclear Weapons";; DoDD 5210.42 and 5210.42-R, "The DoD Personnel Reliability Program'; and DoDD 5210-.41 and S-5210.41-M, "Physical Security of Nuclear Weapons." - Continue to support activities that support nuclear surety policy and provide OSD oversight of the Nuclear Surety program. ***FY 2012 Plans:*** - Conduct OSD oversight and provide direction for actions taken under DoDD 4540.5, "Transportation of Nuclear Weapons"; DoDD S-5210.81, "United States Nuclear Weapons Command and Control, Safety, and Security"; DoDD S-3150.7, "Controlling the Use of Nuclear Weapons";; DoDD 5210.42 and 5210.42-R, "The DoD Personnel Reliability Program'; and DoDD 5210-.41 and S-5210.41-M, "Physical Security of Nuclear Weapons." - Continue to support activities that support nuclear surety policy and provide OSD oversight of the Nuclear Surety program.			
Title: Stockpile Transformation ***Description:*** To meets its security needs and those of its allies, the U.S. will need a safe, secure, and reliable nuclear deterrent for the foreseeable future. There's increased risk, absent nuclear testing, in assuring long-term safety and reliability of today's aging stockpile—the legacy warheads left over from the Cold War. Today's nuclear weapons complex is not sufficiently "responsive" to technical problems in the stockpile, or to potential emerging threats. The task is to ensure the U.S. nuclear weapons stockpile and supporting infrastructure, meets long-term national security needs.	1.456	1.482	1.055

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters*	PROJECT P161: *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: - Conducted life cycle activities in support of the nuclear weapons stockpile under DoDD 3150.1, "Nuclear Weapons Life Cycle" and DODI 5030.55, "DoD Procedures for Joint DoD-DOE Nuclear Weapons Life Cycle Activities. - Managed DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80(0,1), B83, W87, W88 Weapons. - Supported studies for warhead replacement. - Assessed the future of the nuclear weapon stockpile. - Oversaw and evaluate the review of warhead life extension refurbishments. - Maintained and exercised a nuclear enterprise model for DoD. - Supported new Task Forces for strategic systems. - Provided technical support to maintain strategic materials and nuclear power systems. - Conducted analysis of possible warhead replacements using modeling and simulation tools. - Developed an analytical tool for the evaluation of alternatives for the nuclear enterprise. - Developed a strategic communications strategy and plan for communicating stockpile options to stakeholders. ***FY 2011 Plans:*** - Continue to conduct life cycle activities in support of the nuclear weapons stockpile under DoDD 3150.1, "Nuclear Weapons Life Cycle" and DODI 5030.55, "DoD Procedures for Joint DoD-DOE Nuclear Weapons Life Cycle Activities. - Continue to manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80(0,1), B83, W87, W88 Weapons. - Continue to support studies for warhead replacement. - Continue programs to assess the future of the nuclear weapon stockpile. - Oversee the development of next-generation delivery systems. - Complete stockpile transformation plans. - Continue to support new Task Forces for strategic systems. - Continue to maintain and exercise a nuclear enterprise model for DoD. - Continue to provide technical support to maintain strategic materials and nuclear power systems. - Continue to develop a technical analytical capability for making critical decisions regarding the nuclear enterprise. - Continue to conduct analysis of possible warhead replacements using modeling and simulation tools. ***FY 2012 Plans:*** - Continue to conduct life cycle activities in support of the nuclear weapons stockpile under DoDD 3150.1, "Nuclear Weapons Life Cycle" and DODI 5030.55, "DoD Procedures for Joint DoD-DOE Nuclear Weapons Life Cycle Activities. - Continue to manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80(0,1), B83, W87, W88 Weapons.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters*	PROJECT P161: *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continue to support studies for warhead replacement.			
Title: Survivability and Weapons of Mass Destruction (WMD)	1.014	1.120	0.797
FY 2010 Accomplishments: - Provided Nuclear Defense Portfolio oversight. - Analyzed nuclear forensics and other nuclear defense activities to ensure they are in synch with broader interagency tasks. - Planned and coordinated the activities of the National Nuclear Forensics Steering Committee and Working Group. - Developed OSD-wide approach to overseeing Global Nuclear Defense missions within DoD. - Oversaw the integration of all DoD nuclear defense capabilities in support of the Global Nuclear Defense Initiative. - Oversaw the acqusition strategy for DoD Combating Weapons of Mass Destruction requirements. - Provided direction for DoD and OSD preparations to train for response actions, under DoDD 3150.8, "DoD Response to Radiological Accidents. - Maintained the office Go-Kit and classified website to enhance coordination in the event of a nuclear weapon accident. - Directed and coordinated the activities of the NCCS Committee of Principals Subcommittee on Nuclear Weapon Accident Response. - Implemented CBRN Survivability Policy and support the SOG. - Monitored and advised OSD on the status of DoD capability for Nuclear Weapons Effects Simulators and Simulation. - Supported the DoD executive agency (ASD(Homeland Defense)) for interagency actions concerning Combating Weapons of Mass Destruction at home and abroad.			
FY 2011 Plans: - Continue Nuclear Defense Portfolio oversight. - Continue planning and coordinating the activities of the National Nuclear Forensics Steering Committee and Working Group. - Continue to develop OSD-wide approach to overseeing Global Nuclear Defense missions within DoD. - Continue to oversee the integration of all DoD nuclear defense capabilities in support of the Global Nuclear Defense Initiative. - Continue to oversee the acqusition strategy for DoD Combating Weapons of Mass Destruction requirements. - Continue to provide direction for DoD and OSD preparations to train for response actions, under DoDD 3150.8, "DoD Response to Radiological Accidents. - Continue to maintain the office Go-Kit and classified website to enhance coordination in the event of a nuclear weapon accident. - Continue to direct and coordinate the activities of the NCCS Committee of Principals Subcommittee on Nuclear Weapon Accident Response. - Continue to implement CBRN Survivability Policy and support the SOG. - Monitor and advise OSD on the status of DoD capability for Nuclear Weapons Effects Simulators and Simulation.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters*	PROJECT P161: *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continue to support the DoD executive agency (ASD(Homeland Defense)) for interagency actions concerning Combating Weapons of Mass Destruction at home and abroad. ***FY 2012 Plans:*** - Continue Nuclear Defense Portfolio oversight. - Continue planning and coordinating the activities of the National Nuclear Forensics Steering Committee and Working Group. - Continue to develop OSD-wide approach to overseeing Global Nuclear Defense missions within DoD. - Continue to oversee the integration of all DoD nuclear defense capabilities in support of the Global Nuclear Defense Initiative.			
Title: Nuclear Matters ***FY 2010 Accomplishments:*** - Submitted annual reports to the President and the Congress. - Oversaw DoD/DOE relationship regarding the survivability and surety of the national nuclear stockpile. - Served as DoD Sigma 15 Approval Authority (Interface with DOE/NNSA). - Addressed Freedom of Information Act and Mandatory Declassification Requests. - Established a means to provide nuclear technical expertise to senior advisory groups. - Established a program to promote nuclear enterprise awareness and outreach. - Provided physical security RDT&E project/program oversight ***FY 2011 Plans:*** - Submit annual reports to the President and the Congress. - Continue to oversee DoD/DOE relationship regarding the survivability and surety of the national nuclear stockpile. - Continue as DoD Sigma 15 Approval Authority (Interface with DOE/NNSA). - Continue to address Freedom of Information Act and Mandatory Declassification Requests. - Propose technical solutions to address nuclear capability gaps and warfighter requirements. - Provide physical security RDT&E project/program oversight ***FY 2012 Plans:*** - Submit annual reports to the President and the Congress. - Continue to oversee DoD/DOE relationship regarding the survivability and surety of the national nuclear stockpile. - Continue as DoD Sigma 15 Approval Authority (Interface with DOE/NNSA). - Continue to address Freedom of Information Act and Mandatory Declassification Requests. - Propose technical solutions to address nuclear capability gaps and warfighter requirements. - Provide physical security RDT&E project/program oversight	0.884	0.974	0.723
Accomplishments/Planned Programs Subtotals	5.564	6.264	4.261

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters*	PROJECT P161: *Nuclear Matters*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Success in this area is measured by compliance with various statutes and DoD directives that govern the conduct of the affairs within the Office of DATSD(Nuclear Matters). Success is also measured by the currency of information and usability of the website, timeliness and responsivness of reports due to Congress, performance in various response exercises, and feedback from a number of senior-level government organizations that DATSD(Nuclear Matters) supports.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	14.363	15.091	9.437	-	9.437	7.708	7.695	5.589	5.704	Continuing	Continuing
001: *Command Information Superiority Architecture*	5.475	5.752	2.036	-	2.036	-	-	-	-	Continuing	Continuing
002: *Defense Architecture Repository*	1.258	1.322	1.048	-	1.048	1.091	1.090	1.000	1.020	Continuing	Continuing
003: *Integrated Planning and Management*	2.025	2.128	1.686	-	1.686	1.756	1.753	1.608	1.641	Continuing	Continuing
004: *Support to NII Mission Requirements*	5.605	5.889	4.667	-	4.667	4.861	4.852	2.981	3.043	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element supports studies and analysis in the areas of networks, information integration, defense-wide command and control (C2), and communications. This program is funded under Budget Activity 6, RDT&E Management Support because it includes studies and analysis in support of RDT&E efforts.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	14.796	15.091	15.344	-	15.344
Current President's Budget	14.363	15.091	9.437	-	9.437
Total Adjustments	-0.433	-	-5.907	-	-5.907
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.433	-	-	-	-
• OSD Studies Contracts Efficiency	-	-	-0.912	-	-0.912
• DoD Service Support Contracts Efficiency	-	-	-0.599	-	-0.599
• Economic Adjustments	-	-	-0.013	-	-0.013
• NII Contractor Efficiency	-	-	-0.570	-	-0.570
• CISA Program Efficiency	-	-	-3.813	-	-3.813

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*

Change Summary Explanation

FY 2010: Program adjustment -0.433 million.
FY 2011: No change.
FY 2012: CISA program efficiency -3.813 million, Economic Assumptions -0.013million, OSD Studies contracts efficiency -0.912 million, NII Contractor efficiencies -0.570 million, DoD Service Support Contracts efficiency -0.599 million.

Studies contract Efficiencies will be realized by reducing the number of studies that we participate in while still supporting enterprise-wide information technology goals critical to DoD Mission.
Service Support Contract efficiencies will be realized by reducing the reliance on DoD Service Support Contractors by utilizing in-house government support in a constrained personnel and resource environment.
NII reduction to contractor staff efficiencies will be realized by continuing to provide policy, guidance, program oversight, and resource management for command and control (C2), communications, spectrum, information assurance, and Information Technology programs with significantly less contractor support.
Economic Assumptions will be realized by reducing our reliance on contractors while still achieving OASD(NII)/DoD CIO goals and objectives while in a constrained personnel and resource environment.
In support of the Secretaries direction to achieve efficiencies across the department the CISA program has been reduced in FY12 by $3.813.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 001: *Command Information Superiority Architecture*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
001: *Command Information Superiority Architecture*	5.475	5.752	2.036	-	2.036	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The CISA program provides a structured planning process based on Information Technology (IT) best business practices to define current and objective capabilities for IT support to assigned missions in a net-centric environment. CISA is the DoD program that provides architectures in compliance with the Clinger-Cohen Act, OMB Circular A-130, E-Gov Act and other related higher level guidance from the Federal CIO Council and the Federal Enterprise Architecture Program Management Office, which mandates the development and use of architectures as validation for IT investment decisions. The CISA program develops and maintains the Global Information Grid Enterprise Architecture, the Department's enterprise architecture as directed by Title 40. It supports the development of the framework, processes, and standards for developing and maintaining a DoD federated enterprise architecture. CISA is the leading developer for the net-centric reference model, the standard evaluation guide used by DoD Program Managers at all echelons of command for transitioning DoD programs to the net-centric environment. The CISA program supports the development of architectural standard tools and systems, including the DoD Architectural Framework manual and artifacts as well as facilitating the effective use of architectures in IT portfolio management. Develop and maintain key GIG policy and guidance documents that drive the acquisition, transition to and operation of a net-centric GIG; the implementation of policy/guidance through a set of critical supporting activities such as IT standards management, and DoD transition to Internet Protocol version 6 (IPv6); Real Time Service and IP convergence and enforcing policy through key enterprise governance mechanisms. Review and assess Command and Control, Computers, Communications and Intelligence Support Plans / Information Support Plans for the DoD CIO, identifying interoperability, supportability, net-centric and integration issues.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Command Information Superiority Architectures Accomplishments and Plans	5.475	5.752	2.036
FY 2010 Accomplishments: - Oversaw the activities of Architecture Standards Review Group. - Completed delivery of repeatable process for Enterprise Reference Architectures. Submit to Office of Management and Budget to support cross-Agency efforts. - Completed development of the DoD IEA, V1.2 with associated mappings to the JCSFLs, the DoD Information Enterprise Transition Plan, the DoDAF 2.0 and where appropriate the GIG 2.0. - Developed a companion Reference Architecture structure and process with net-centric patterns based upon the principles and rules of the DoD IEA. - Developed the Architecture COI vocabulary - Developed the extensions to the FEA Reference Models - Implemented DoDAF Configuration Management (CM).			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 001: *Command Information Superiority Architecture*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Supported Universal Profile for DoDAF & Ministry of Defense Architecture Framework (MODAF) (UPDM) - Continued DoDAF 2.0 Outreach. - Continued Architecture Center of Excellence Pilot for Capability Architectures. - Web Enabled DoDAF . - Develop DoDAF Web Based Training - Participated in NATO Enterprise Architecture policy development - Conducted technical reviews of allied architectural policy, projects, and standards. - Harmonization of DoD's Information Technology Standards and architectural processes with the Federal, Intelligence Community, and allied partners, will increase interoperability and aid in the attainment of an information advantage - Successfully synchronized NetOps policy guidance to support the establishment of USCYBERCOM. Provided Input on NetOps to Cyber section of GDF - Successfully completed the NetOps I-Plan FO/GO/SES Coordination and satisfactorily adjudicated all critical comments - Successfully provided NetOps input to DoD IE Strategic Plan & Roadmap (Goal 3 – Synchronized Operations) - Provided constructive input to the GIG 2.0 I-Plan in order to improve clarity, prioritized tasks and improve task execution feasibility - Provided input to the Enterprise Ops Oversight Committee (EOOC) - Continued to lead the development and execution of NetOps pilots to improve NetOps data sharing between DoD Components - Developed a NetOps prototype (GADSS – Global Information Grid (GIG) Area of Responsibility (AOR) Decision Support System) in partnership with USSTRATCOM and DISA. The successful technical demonstration was achieved Oct 2010 with plans to field as an Enterprise Service integrated into programs of record by April 2011. Additional NetOps services will be developed reusing the GADSS service and rapid development process applied here. . - Initiated four COIs developing Enterprise solutions to meet findings and recommendations in the Ft. Hood Report related to Defense Installation Access Control and Force Protection. (ongoing) . - Developing secure information sharing between DOD users and DOJ (FBI National Crime Information Center), and TSC (Terrorist Screening Data Base) to improve protection of Defense forces and installations globally. (ongoing) - Developed an integrated framework integrating open-source identity management & single-sign on solution with a commercial off-the-shelf content management system and the OZONE Widget Framework and OZONE Marketplace, existing web-application frameworks developed and maintained by an agency in the Intelligence Community. - Fielded technology preview hosted at contractor facility for demonstration and initial prototyping of 3rd party applications. - Developed single-sign on integration toolkit for third-party application providers. - Published storefront developer guide for 3rd parties who want to build applications on top of storefront framework. - Fielded live test and integration environment on DoD network "storefront.mil" for early user test and integration with operational services. This implementation automatically provisions users with DoD-issued Public-Key Infrastructure (PKI) credentials by			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 001: *Command Information Superiority Architecture*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
accessing existing DoD enterprise directory services operated by DISA that broker data from the Defense Manpower Data Center (DMDC). - Developed initial capability for discovery of government mobile applications for iPhone & Android platforms, leveraging existing internet-based distribution channels ***FY 2011 Plans:*** - Continue to provide strategy, policy, oversight, and guidance for Architecture across the DoD Enterprise. - Continue development and delivery of the DoD IEA V2.0. - Publish Essential DoD Architecture Framework Guide - Continue to work with CC/S/As to ensure capabilities for operating and defending the GIG are acquired, managed, integrated and synchronized. - Continue to refine governance structures to address new policies and oversight requirements. - Continue to monitor and assess component compliance regarding new policies and guidance. - Continue refinement of the Net Centric DoD Architecture Framework to address new demands technologies and IA requirements. - Integrate , align and update NetOps architecture (include CND architecture) into IE Architecture construct. - Review and update (as required) the NetOps policy in support of CYBERCOM - Oversee execution of Tasks in NetOps I-Plan - Continue to synchronize NetOps activities across DoD - Continue to provide leadership to the development and implementation of GIG SA data strategy - Provide input to the development of DoD IE Strategic Plan Roadmap - Deliver a NetOps solution (GADSS – Global Information Grid (GIG) Area of Responsibility (AOR) Decision Support System) in partnership with USSTRATCOM and DISA. The successful technical demonstration was achieved Oct 2010 with plans to field as an Enterprise Service integrated into programs of record by April 2011. Additional NetOps services will be developed leveraging the GADSS service and rapid development process applied here. - Deliver a NetOps solution to NETWARCOM leveraging the GADSS COI deliverable. - Deliver an operational prototype data sharing service for DOD Component installations using NCIC data to discover if potential visitors have Federal warrants, wants, or are on the KAST list. - Continue support of the four Defense Installation Access Control (DIAC) COIs developing Enterprise solutions to meet findings and recommendations in the Ft. Hood Report related to Defense Installation Access Control and Force Protection (ongoing). In addition to the DIAC-V COI described above, the DIAC Criminal Justice COI data sharing service supporting NCIS, OSI, and CID, TSDB/Access COI, and the Physical Access Control Systems (PACS) Enterprise data sharing activities started in 2010 will continue through 2011.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605170D8Z: *Support to Networks and Information Integration*	**PROJECT** 001: *Command Information Superiority Architecture*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Developing secure information sharing service for DOD users authorized for access to Terrorist Screening Data, (TSDB/Access COI), to improve protection of Defense forces and installations globally (ongoing) - Develop a first increment of electronic health records data sharing services supporting DOD and VA given appropriate task authorities, resources, working agreements, and project scope are available. - Develop an initial data sharing service for the C-IED COI if agreement about the scope and priority to deliver services based on the current three-year data modeling effort. - Enhance initial capability for discovery of applications for mobile devices (e.g. smartphones) to support secure distribution - Integrate document management and workflow capabilities to address the capability delta between existing service portal solutions and storefront's initial capabilities. - Develop and field user account management workflow processes for sponsored access to the storefront environment to mission partners who are not part of the DoD PKI (e.g. coalition partners, non-governmental organizations) or for environments where DoD PKI is not pervasive (such as SIPRnet) ***FY 2012 Plans:*** In support of the Secretaries direction to achieve efficiencies across the department the CISA program has been reduced in FY12 by $3.813 million. The residual funding in FY12 is required to complete the following on-going deliverables: - Implement Net Ops plan designed to enable secure and efficient Net-Centric Operations - Synchronize policy guidance to support cyberspace and GIG operations - Implement capabilities for operating and defending the GIG in support of the National Military Strategy for Cyberspace Operations By the close of FY12 the synchronization of the Net Ops plan and the DoD Architectural Framework manual and artifacts will be complete as will the development portion of the CISA program.			
Accomplishments/Planned Programs Subtotals	5.475	5.752	2.036

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0902198D8Z: *Command Information Superiority Architecture*	4.391	3.768	3.522		3.522	2.395	0.000	0.000	0.000	9.685	14.076

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 001: *Command Information Superiority Architecture*

E. Performance Metrics

CISA Performance is based on the number of initiatives that transition to the net-centric environment to support operations.
Measures include:
- Timely development and issuance of policy, guidance, processes, and technologies to build, populate, govern, operate, and protect the Network.
- Policies developed and issued for GIG design, architecture content management, implementation, and operations.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 002: *Defense Architecture Repository*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
002: *Defense Architecture Repository*	1.258	1.322	1.048	-	1.048	1.091	1.090	1.000	1.020	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

DARS is the Department's enterprise registry, catalog and navigation map for enterprise architecture. It serves as the Department's primary catalog of architecture data holdings and provides users the ability to register holdings metadata and search, retrieve, and use DoD architecture data in federated architecture data repositories across DoD. DARS provides a key component of the Department's net-centric data management capability by federating enterprise architecture data across the Department. It enables alignment of program architecture components with the Federal Enterprise Architecture Business Reference Model - consistent with OMB directives for exhibit 300s - via the DoD Business Reference Model. DARS implements a federated search capability and metadata catalog that will interoperate with the Department's Net-Centric Enterprise Discovery Service and enterprise content metadata catalog. Architecture metadata is searchable using the DARS federated discovery web service. The discovery search results provide links to architecture data that is retrievable based on user roles and access permissions. Implementations are accessible on both the NIPRNET (unclassified) and SIPRNET (Collateral Classified). Key features of the DARS program focus on: (1) Making architecture data visible, accessible, trusted, understandable, and interoperable (2) enabling reuse of validated architecture data to build "composite" integrated architectures; (3) enabling architecture analysis; and, (4) integrating architecture data into the DoD mainstream decision-making processes. The Department of the Air Force, Army, and Navy CIO's are collaborating in the development of DARS federation web services via the Federated Joint Architecture Working Group under the auspices of the DoD Enterprise Architecture Summit to ensure DoD-wide access to and usability of all components of the composite DoD enterprise architecture model.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: DARS Accomplishments and Plans	1.258	1.322	1.048
FY 2010 Accomplishments: - Supported DARS User Group Meetings, and Functional Capability Document - Delivered Improved DARS Web GUI, AV-1, and AV-2 registration - Delivered Web online Table Graphic EA Architecture Navigator - Delivered DARS Road Map Provide for and continue enterprise-level operational support for the DoD Architecture Registry System. - Enforced transition to a complete services web-based application by expanding the current net-centric services based security and compliant met-data discovery with a collaborate environment that ensures end-to-end information assurance of validated architecture data. - Worked with DoD Component to refine requirements and processes to effectively expose existing architectures for reuse.			
FY 2011 Plans: - Recode all Legacy software code to streamline the Web services			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 002: *Defense Architecture Repository*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Build out Web measurement and scorecard management capability - Advance Web GUI, AV-1, and AV-2 registration - Continue Table Graphic EA Architecture search, discovery, and delivery - Continue Table Graphic Drilldown Architectures - Continue enterprise-level operational support for the DoD Architecture Registry System. - Continue to work with DoD Component to refine requirements and processes to effectively expose existing architectures for reuse. - Continue to expand and refine DARS to accommodate registration /federation requirements. - Continue integration of DARS data services into the “Core Enterprise Services”. ***FY 2012 Plans:*** - Deliver DARS Architecture - Deliver Web online Architecture management, measurement - Link all architectures to the Enterprise Architecture Core Table Graphic - Deliver /approve DARS Functional Capability Document - Continue enterprise-level operational support for the DoD Architecture Registry System. - Continue to work with DoD Component to refine requirements and processes to effectively expose existing architectures for reuse. - Continue to expand and refine DARS to accommodate registration /federation requirements. - Continue integration of DARS data services into the “Core Enterprise Services”.			
Accomplishments/Planned Programs Subtotals	1.258	1.322	1.048

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

DARS Performance Metrics:

- Timely development and issuance of policy, guidance, processes, and technologies to build, populate, govern, operate, and protect the Network.
- Policies developed and issued for GIG design, architecture content management, implementation, and operations.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 003: *Integrated Planning and Management*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
003: *Integrated Planning and Management*	2.025	2.128	1.686	-	1.686	1.756	1.753	1.608	1.641	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Integrated Planning and Management Project encompasses the National and Nuclear Command Capabilities (N2CC) Management Office's (NMO) responsibilities for establishing overall DoD policy and oversight with respect to the capability development, interoperability, standards, and architecture for National and Nuclear Command Capabilities for our National Leadership. The NMO serves as the single point of contact within the Department for policy, long-range plans, programs, integrated mission advocacy, and management of decision-maker capabilities. The objective of the NMO is to ensure capabilities are in place to provide complete and timely situational awareness and decision tools for senior decision-makers. Additionally, the NMO assists the ASD NII/DoD CIO as the Executive Agent and primary OSD advocate for the White House Military Office with oversight of a wide range of DoD command and control (C2) and communications assets and oversees the efforts of the Services and Agencies in the design, integration, and deployment of critical and sensitive C2 capabilities. Three overall areas of focus include: 1) National Senior Leader C3 System to include Emergency Preparedness and DoD support to Civil Authorities; 2) Global Nuclear C2 and Nuclear Strike plus Integrated Missile Defense and Tactical Warning; and 3) Continuity of Government (COG) in conjunction with Mission Assurance (MA).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Integrated Planning and Management	2.025	2.128	1.686
FY 2010 Accomplishments: Managed efforts to identify, minimize, or eliminate shortfalls or deficiencies in the C3 programs that support White House and DoD senior leaders - The Defense Laboratory system engineering team produced a requirements database, and a Systems Concept Document to fast-track promising technologies and to posture requirements for the long-term - Finalized a comprehensive plan for developing capabilities to support information and mission assurance capabilities, and initiation of processes to insure oversight of the Capabilities Integration Team (CIT) -- an NLCC integrated product team. - Conducted experimentation and identify appropriate technologies that will advance the capabilities needed to support COOP/ COG/ECG requirements - Continued developing integrated schedule, technical architecture features and concepts, and definition of the operating environment - Continued addressing elements for long-term integrated design and development of capabilities that cross multiple DoD agencies, programs of record, and the Leadership Command Information Services (L-CIS). - Continued efforts to enhance technical collaboration among Gov't organizations across multiple key Federal Agencies.			
FY 2011 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 003: *Integrated Planning and Management*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Continue to work among the various stakeholders – NMO, DISA, ASD(HD), USSTRATCOM, NSA, and both DoD and National Senior Leadership – to identify deficiencies and risks to L-CIS programs, systems, networks, and applications, and coordinate and evolve towards more integrated, sustainable, and distributed capabilities of collaborative voice, video, data, and situational awareness that is secure and survivable. - Continue efforts with Defense Laboratories and industry partners to better understand threats and risks to national leadership C2 capabilities - Work towards a Systems Requirements Review, and towards the evolution of engineering plans and software tools for integration of management schedules, requirements, architectures, and facilitating informed decision making for NLCC capabilities - Investigate performance and capabilities of candidate or representative C3 systems and technologies - Continue efforts with UARC/FFRDCs and industry partners to better integrate requirements, schedules, technical architectures and concepts, and definitions of operating environments involving the stakeholders (above). - Continue to support the Capabilities Integration Team (CIT) and governance needs ***FY 2012 Plans:*** Continue efforts to assess evolving technologies to integrate White House, DoD senior leader, and inter-Agency requirements for enhanced and informed decision-making, information sharing, coordination, and resolution of issues across all spectra of threat scenarios, regardless of time or senior leadership location. - Continue UARCs research and development of analytical tools that will help decision-makers provision senior leadership with enhanced situational awareness, conferencing, and collaboration, courses of action, execution of decisions, and feedback mechanisms to best assure critical and sometimes unanticipated needs are met within a framework of common decision-making objectives.			
Accomplishments/Planned Programs Subtotals	2.025	2.128	1.686

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

C2 Integrated Planning & Management Performance Metrics:
- Successfully develop, coordinate, and publish DOD C2 policies and operational concepts.
- Establishment of an information integration and decision portfolio of C2 services and applications to demonstrate selected capabilities.
- Development of Dynamic Operational Communities of Interest services based on the capabilities provided by the NCES Program.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605170D8Z: *Support to Networks and Information Integration*	**PROJECT** 003: *Integrated Planning and Management*

Establishment of an ontological framework and XML data model to permit the meta-tagging of information integration decision portfolio data at the strategic and national C2 level in a manner consistent with other DoD data strategies and modeling efforts.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 004: *Support to NII Mission Requirements*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
004: *Support to NII Mission Requirements*	5.605	5.889	4.667	-	4.667	4.861	4.852	2.981	3.043	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program supports studies and analyses in the areas of networks, information integration, defense-wide command and control (C2), and communications.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Support to NII Mission Requirements	5.605	5.889	4.667

FY 2010 Accomplishments:

$3.500 million - Global Positioning System (GPS) User Equipment Synchronization to conduct OASD/NII oversight of Global Positioning System (GPS) management and planning activities required for the National Space-Based Positioning, Navigation and Timing Executive Committee. Funding supported:

- Full time on-site staff support to ASD(NII)/DoD CIO Space Programs and Policy (3 STE)
- Full time PNT liaison officer for OASD(NII)/DoD CIO at US STRATCOM (1 STE)
- Authored and coordinated International Supplement to GPS Security Policy DODI 4650.0x
- Authored and coordinate Information Assurance/COMSEC Supplement to GPS Security Policy DODI 4650.0x
- Finalized and executed the GPS Security Policy DODI 4650.0x
- Finalized and coordinating Navigation Warfare Concept of Operations DODI 4650.0x within DoD
- Finalized Next Generation Air Transport System (NextGen) DODI 5030.x ; presented to PBFA for their disposition
- Initiated study of Security Control of Navigation Aids DODI 5030.x in concert with NORAD, NORTHCOM, DHS, and FAA
- Developed NextGen interfaces with the GPS Wing, Joint Program Development Office (JPDO), Air Force, and Policy Board for Federal Aviation (PBFA)
- Conducted biennial update of the Federal Radio-Navigation Plan (FRP)
- Coordinated and implemented Red Key Sundown Policy
- Provided staff support, performed research and conducted studies as directed by DEPSECDEF in his role as co-chair of the National Executive Committee for Space-Based PNT and for ASD(NII)/DoD CIO in his role as co-chair of the Executive Steering Group
- Performed annual update of National Five-year Plan for Space-Based Positioning, Navigation and Timing (PNT)
- Authored DoD portion, conducted interagency coordination and submitted the GPS Biennial Report to Congress for signature by the ASD(NII)/DoD CIO
- Oversaw and coordinated execution of U.S National PNT Architecture Transition Plan within DoD and in the interagency forum

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 004: *Support to NII Mission Requirements*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Conducted a study to identify and catalog civil/commercial GPS uses, requirements, service benefits and augmentation dependencies to inform implementation and execution of Navwar CONOP, Security Control of Navaids, the National PNT Architecture, and NextGen $2.105 million - Command and Control Research: - Continued to enhance the tools and instrumented environments that support C2-related research - Continued to pursue research on new approaches to military and civil-military command and control suitable for 21st Century coalition operations including stability and reconstruction. - Continued to fund the Edge Institute at the Navy Post Graduate School (NPS) and selected research efforts at other universities and research centers. - Continued to support the Network Science Center at the USMA at West Point to engage faculty and cadets in network-centric C2 related projects. - Continued, in collaboration with allies and NATO partners, the development and testing of a maturity model for network-enabled coalition command and control and the development of related metrics - Supported DoD organizations in the design and conduct of C2-related experimentation - Continued to work with the DoD community and international partners to improve the understanding of Information Age command and control related concepts, technologies, and experiments. - Conducted 14th International Command and Control Research and Technology Symposium. - Conducted workshops to explore command and control related issues. - Continued to develop manuscripts for widely read and respected C2 publications and outreach program. - Maintained and expanded C2 research community website - Continued campaign of experimentation related to information sharing, collaboration, and trust. ***FY 2011 Plans:*** $3.500 million for Global Positioning System (GPS) User Equipment Synchronization to conduct OASD/NII oversight of Global Positioning System (GPS) management and planning activities required for the National Space-Based Positioning, Navigation and Timing Executive Committee. Funding will support: - Full time on-site staff support to ASD(NII)/DoD CIO Space Programs and Policy (3 STE) - Oversee execution of International Supplement to GPS Security Policy DODI 4650.0x - Oversee execution of Information Assurance/COMSEC Supplement to GPS Security Policy DODI 4650.0x - Implement GPS Security Policy DODI 4650.0x - Tie DoD user data and populated GPS Protection Profile matrix from Navigation Warfare Concept of Operations DODI 4650.0x into Warfighting Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 004: *Support to NII Mission Requirements*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Author PNT Navigation Warfare Annexes to all the Operations Plans (OPLANS) and Contingency Plans (CONPLANS)in coordination with US STRATCOM - Oversee execution and conduct Analysis of Alternatives for GPS Enterprise and PNT Assurance alternatives IAW CAPE guidance - Oversee execution and conduct Analysis of Alternatives for Security Control of Navigation Aids DODI 5030.x in concert with NORAD, NORTHCOM, DHS, and FAA - Continue developing NextGen interfaces with the GPS Wing, Joint Program Development Office (JPDO), Air Force, and Policy Board for Federal Aviation (PBFA) - Continue implementation of Red Key Sundown Policy - Conduct studies and programmatic analysis of activities involving OCX and GPS III contract activities - Provide staff support, perform research and conduct studies as directed by DEPSECDEF in his role as co-chair of the National Executive Committee for Space-Based PNT and for ASD(NII)/DoD CIO in his role as co-chair of the Executive Steering Group - Perform annual update of National Five-year Plan for Space-Based Positioning, Navigation and Timing (PNT) - Apply Navigation Warfare Concept of Operations DODI 4650.0x via the Joint Navigation Warfare Center (JNWC) and US STRATCOM to develop Doctrine, Tactics, Techniques and Procedures, Training, Equipment Validation and Material Solutions to Navigation Warfare challenges to the Military Services and Combatant Commanders in the scenarios defined in the CONPLANS and OPLANS. $2.389 million - Command and Control Research: - Continue to enhance the tools and instrumented environments that support C2-related research - Continue to pursue research on new approaches to military and civil-military command and control suitable for 21st Century coalition operations including stability and reconstruction. - Continue to fund the Edge Institute at the Navy Post Graduate School (NPS) and selected research efforts at other universities and research centers. - Continue to support the Network Science Center at the USMA at West Point to engage faculty and cadets in network-centric C2 related projects. - Continue, in collaboration with allies and NATO partners, the development and testing of a maturity model for network-enabled coalition command and control and the development of related metrics - Support DoD organizations in the design and conduct of C2-related experimentation - Continue to work with the DoD community and international partners to improve the understanding of Information Age command and control related concepts, technologies, and experiments. - Conduct 14th International Command and Control Research and Technology Symposium. - Conduct workshops to explore command and control related issues.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 004: *Support to NII Mission Requirements*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continue to develop manuscripts for widely read and respected C2 publications and outreach program. - Maintain and expand C2 research community website - Continue campaign of experimentation related to information sharing, collaboration, and trust. ***FY 2012 Plans:*** $3.111 million for Global Positioning System (GPS) User Equipment Synchronization to conduct OASD/NII oversight of Global Positioning System (GPS) management and planning activities required for the National Space-Based Positioning, Navigation and Timing Executive Committee. Funding will support: - Full time on-site staff support to ASD(NII)/DoD CIO Space Programs and Policy (3 STE) - Implement and manage the International Supplement to GPS Security Policy DODI 4650.0x - Implement and manage the Information Assurance/COMSEC Supplement to GPS Security Policy DODI 4650.0x - Implement and manage the GPS Security Policy DODI 4650.0x - Implement the GPS Protection Profile matrix from Navigation Warfare Concept of Operations DODI 4650.0x in conjunction with Warfighting Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM - Implement and manage PNT Navigation Warfare Annexes to all the Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM - Implement the DoD GPSEM and PNT Assurance AoA as part of a Material Development Decision (MDD) IAW DoDD 5000.02 - Insure the Analysis of Alternatives for implementation of Next Generation Air Transport System (NextGen) DODI 5030.x is injected into the DoDD 5000.02 decision process in an MDD - Implement the recommendations of the Analysis of Alternatives for Security Control of Navigation Aids DODI 5030.x in the DoD DOTMLPF construct - Continue developing NextGen interfaces with the GPS Wing, Joint Program Development Office (JPDO), Air Force, and Policy Board for Federal Aviation (PBFA) - Continue implementation of Red Key Sundown Policy - Conduct studies and programmatic analysis of activities involving OCX, MGUE, and GPS III contract activities - Provide staff support, perform research and conduct studies as directed by DEPSECDEF in his role as co-chair of the National Executive Committee for Space-B ased PNT and for ASD(NII)/DoD CIO in his role as co-chair of the Executive Steering Group - Perform annual update of National Five-year Plan for Space-Based Positioning, Navigation and Timing (PNT) - Draft, coordinate, and publish the 2012 edition of the Federal Radionavigation Plan (FRP) - Apply Navigation Warfare Concept of Operations DODI 4650.0x via the Joint Navigation Warfare Center (JNWC) and US STRATCOM to develop Doctrine, Tactics, Techniques and Procedures, Training, Equipment Validation and Material Solutions to Navigation Warfare challenges to the Military Services and Combatant Commanders in the scenarios defined in the CONPLANS and OPLANS.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605170D8Z: *Support to Networks and Information Integration*	PROJECT 004: *Support to NII Mission Requirements*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
$1.556 million - Command and Control Research: - Continue to enhance the tools and instrumented environments (ELICIT and abELICIT) that support C2-related research with a focus on mixed human-agent experiments that permits cost-effective exploration of selected individual and team characteristics to extend costly human experimentation - Continue a focused research initiative related to C2 Agility in the context of Complex Endeavors - Continue to pursue research on new approaches to military and civil-military command and control suitable for 21st Century coalition operations including stability and reconstruction. - Continue to fund the Edge Institute at the Navy Post Graduate School (NPS) and selected research efforts at other universities and research centers. - Continue to provide expertise to the Network Science Center at the USMA at West Point and to engage faculty and cadets in network-centric C2 related projects. - Complete the second phase of a research effort, in collaboration with allies and NATO partners, that defines Agility in the context of entity and collective focus and convergence - Support DoD organizations in the design and conduct of C2-related experimentation - Continue to work with the DoD community and international partners to improve the understanding of Information Age command and control related concepts, technologies, and experiments. - Conduct 17th International Command and Control Research and Technology Symposium - Conduct workshops to explore command and control related issues. - Continue to develop manuscripts for widely read and respected C2 publications and outreach program. - Maintain and expand C2 research community website - Continue campaigns of experimentation using ELICIT and abELICIT to explore issues related to infostructure characteristics and performance and information sharing, collaboration, and trust.			
Accomplishments/Planned Programs Subtotals	5.605	5.889	4.667

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Community participation in command and control research program (CCRP) events.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605170D8Z: *Support to Networks and Information Integration*	**PROJECT** 004: *Support to NII Mission Requirements*

- Number of requests for / downloads of CCRP publications.
- Number of international countries engaged in net centric discussions and collaborative research and analysis efforts.
- Number of researchers using CCRP-developed models, metrics, and experimental environments and tools.
- Successfully sponsored symposia/workshops to discuss command and control research initiatives.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605200D8Z: *General Support to USD(I)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	11.031	6.227	6.549	9.200	15.749	6.820	6.917	7.015	7.215	Continuing	Continuing
001: *Developmental Activities*	2.795	3.194	3.406	-	3.406	3.647	3.700	3.752	3.851	Continuing	Continuing
002: *Operations Integration*	3.036	3.033	3.143	-	3.143	3.173	3.217	3.263	3.364	Continuing	Continuing
003: *Counter Threat Finance - Intelligence*	5.200	-	-	-	-	-	-	-	-	Continuing	Continuing
004: *Haystack Projects*	-	-	-	9.200	9.200	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

001: Developmental Activities provides innovative approaches to address intelligence, intelligence related capabilities, and intelligence sharing.

002: Operations Integration focuses on technologies and their applications on activities of the OUSD(I).

003: Counter Threat Finance - Intelligence address a need to understand the environment in which threat actors operate in order to develop a capability to counter these activities.

004: Haystack Projects develops/demonstrates machine solutions that maximize analysis and operational decision making through automated entity extraction and resolution of very large structured and unstructured data sets, resulting in advanced automated data fusion and information discovery.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	5.840	6.227	6.558	-	6.558
Current President's Budget	11.031	6.227	6.549	9.200	15.749
Total Adjustments	5.191	-	-0.009	9.200	9.191
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department Adjustment	-0.009	-	-0.009	-	-0.009
• Omnibus Reprogramming	5.200	-	-	-	-
• OCO Request	-	-	-	9.200	9.200

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605200D8Z: *General Support to USD(I)*	PROJECT 001: *Developmental Activities*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
001: *Developmental Activities*	2.795	3.194	3.406	-	3.406	3.647	3.700	3.752	3.851	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program focuses on developmental technologies, methodologies, and capabilities. These activities will provide unique and innovative approaches to address intelligence, intelligence related capabilities, and intelligence sharing initiatives.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Developmental Activities	2.795	3.194	3.406	-	3.406
FY 2010 Accomplishments: Continued to leverage technologies, assess innovative capabilities, and develop methodologies to support the Defense Intelligence Enterprise.					
FY 2011 Plans: Continue to leverage technologies, assess innovative capabilities, and develop methodologies to support the Defense Intelligence Enterprise.					
FY 2012 Base Plans: Continue to leverage technologies, assess innovative capabilities, and develop methodologies to support the Defense Intelligence Enterprise.					
Accomplishments/Planned Programs Subtotals	2.795	3.194	3.406	-	3.406

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605200D8Z: *General Support to USD(I)*	PROJECT 002: *Operations Integration*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
002: *Operations Integration*	3.036	3.033	3.143	-	3.143	3.173	3.217	3.263	3.364	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program focuses on technologies for the application to activities of the USD(I). It includes evaluation of concepts, technology development, and feasibility studies related to intelligence processes, shortfalls, and requirements that affect intelligence policy, planning and operational guidance.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Operations Integration	3.036	3.033	3.143	-	3.143
FY 2010 Accomplishments: Details classified above Secret level.					
FY 2011 Plans: Details classified above Secret level.					
FY 2012 Base Plans: Details classified above Secret level.					
Accomplishments/Planned Programs Subtotals	3.036	3.033	3.143	-	3.143

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605200D8Z: *General Support to USD(I)*	PROJECT 003: *Counter Threat Finance - Intelligence*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
003: *Counter Threat Finance - Intelligence*	5.200	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Development of creative approaches to improve information sharing on the analyses of bulk transactional data, enabling soft-power (non-kinetic targeting) and continued support to development of infrastructure knowledge bases.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Counter Threat Finance - Intelligence ***Description:*** Efforts include: development of creative approaches to improve information sharing on the analyses of bulk transactional data, enabling soft-power (non-kinetic targeting) and continued support to development of infrastructure knowledge bases. ***FY 2010 Accomplishments:*** Provided foundational systems and processes for use with finance Counter-Threat Finance and foreign military industrial complex analytical efforts.	5.200	-	-	-	-
Accomplishments/Planned Programs Subtotals	5.200	-	-	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605200D8Z: *General Support to USD(I)*	PROJECT 004: *Haystack Projects*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
004: *Haystack Projects*	-	-	-	9.200	9.200	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Haystack Projects develop/demonstrate machine solutions that maximize analysis and operational decision making through automated entity extraction and resolution of very large structured and unstructured data sets, resulting in advanced automated data fusion and information discovery.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Haystack Projects ***Description:*** Develop/demonstrate machine solutions that maximize analysis and operational decision making through automated entity extraction and resolution of very large structured and unstructured data sets, resulting in advanced automated data fusion and information discovery. ***FY 2012 Base Plans:*** N/A ***FY 2012 OCO Plans:*** Mission Support (Details provided in Defense-Wide classified book)	-	-	-	9.200	9.200
Accomplishments/Planned Programs Subtotals	-	-	-	9.200	9.200

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605502D8Z: *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	56.443	-	-	-	-	-	-	-	-	Continuing	Continuing
P502: *SBIR/STTR*	56.443	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

N/A

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	56.443	-	-	-	-
Total Adjustments	56.443	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	56.443	-			

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: SBIR/STTR	56.443	-	-
FY 2010 Accomplishments: N/A			
Accomplishments/Planned Programs Subtotals	56.443	-	-

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605502D8Z: *Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)*

F. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0605790D8Z: *SBIR/Challenge Admin*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	2.056	2.189	1.924	-	1.924	1.880	1.921	1.959	2.597	Continuing	Continuing
P518: *SBIR/Challenge Admin*	2.056	2.189	1.924	-	1.924	1.880	1.921	1.959	2.597	Continuing	Continuing

A. Mission Description and Budget Item Justification

(U) This Program Element (PE) provides funding for the administration of the Department of Defense (DoD) Small Business Innovation Research (SBIR) Program and the Small Business Technology Transfer (STTR) Program. The SBIR/STTR Program funds over one billion dollars annually in mission oriented research and development projects at small technology companies. The purpose of the program is to stimulate technological innovation, increase private sector commercialization of Federal R&D, increase small business participation in Federally funded R&D, foster participation by minority and disadvantaged firms in technological innovation, and foster cooperative research & technology transfer between small business and research institutions. The SBIR/STTR Program is currently authorized under public law (PL) 111-251 and is codified in 15 USC 638. The SBIR/STTR Program competitively funds scientific and technical innovation to specifically address the needs of participating DoD components.

(U) DoD components participating in the SBIR Program include the: Army, Navy, Air Force, Defense Advanced Research Projects Agency (DARPA), Missile Defense Agency (MDA), Defense Threat Reduction Agency (DTRA), U.S. Special Operations Command (SOCOM), Joint Science & Technology Office for Chemical & Biological Defense (CBD), National Geospatial-Intelligence Agency (NGA), the Defense Logistics Agency (DLA), the Defense Microelectronics Activity (DMEA) and the Office of Secretary of Defense (OSD) through the Director, Defense Research & Engineering (DDR&E). DoD components participating in the STTR Program include the: Army, Navy, Air Force, DARPA, MDA, and OSD.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605790D8Z: *SBIR/Challenge Admin*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	2.163	2.189	2.237	-	2.237
Current President's Budget	2.056	2.189	1.924	-	1.924
Total Adjustments	-0.107	-	-0.313	-	-0.313
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense Efficiency - Baseline Review	-	-	-0.020	-	-0.020
• Defense Efficiency - Report, Studies, Boards, and Commissions	-0.107	-	-0.056	-	-0.056
• Defense Efficiency - Contractor Staff Support	-	-	-0.234	-	-0.234
• Economic Adjustments	-	-	-0.003	-	-0.003

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605790D8Z: *SBIR/Challenge Admin*	PROJECT P518: *SBIR/Challenge Admin*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P518: *SBIR/Challenge Admin*	2.056	2.189	1.924	-	1.924	1.880	1.921	1.959	2.597	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

(U) The SBIR/STTR Program is executed in three phases. The purpose of Phase I is to determine, insofar as possible, the scientific technical and commercial merit, and feasibility of ideas submitted under the SBIR/STTR Program. Phase II awards are made to firms that have been awarded a Phase I contract on the basis of the results of their Phase I effort and the scientific, technical, and commercial merit of the Phase II proposal. Phase II is the principal research or research and development effort and is expected to produce a well-defined deliverable prototype. Phase III SBIR/STTR efforts derive from, extend or conclude Phase I or Phase II efforts, and are not funded with SBIR/STTR funds. Under Phase III, companies participating in the SBIR/STTR Program are expected to obtain funding from the private sector and/or non-SBIR/STTR government sources to develop the prototype into a viable product or non-R&D service for sale in military and/or private sector markets.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: SBIR/Challenge Admin	2.056	2.189	1.924

Description: (U) Public law mandating the SBIR/STTR Programs prohibits the use of the SBIR/STTR budget to fund administrative costs of the program, therefore program element (PE) 0605790D8Z is the only source of funds for the coordination, administration and execution of the Department's SBIR/STTR Programs. In addition to funding costs for program administration, coordination and execution, PE 0605790D8Z funds essential elements of the SBIR/STTR Program that are required by law including: (a) the development of technical topics, preparation SBIR/STTR R&D solicitations, and receipt of proposal responses; (b) the development and maintenance of information systems and software required for the measurement, evaluation, and effective management of the Department's SBIR/STTR Programs; (c) outreach to small technology companies, potential investors in such companies, SDBs WOSBs HBCU/MIs and others, to facilitate participation in the SBIR/STTR Programs; (d) oversight and reporting of Phase III technology transition in support of the DoD SBIR Commercialization Pilot Program (CPP)(section 252 of the NDAA for FY 2006); and (e) preparing reports required for the SBIR/STTR Programs as mandated by law and policy.

FY 2010 Accomplishments:

(U) FY 2010 accomplishments include program administration, coordination and execution of the DoD SBIR/STTR Program. Specifically, managed the execution of the FY 2010 DoD SBIR/STTR budget between 11 DoD Components to include:

1) Coordinated and executed of the administrative portions of the DoD SBIR/STTR Programs - administered the online topic development tool facilitating the development and approval of 881 technical topics, developed five SBIR/STTR solicitations, and received and distributed 15,967 SBIR/STTR proposals;

2) Maintained and modified automated processes across the entire SBIR/STTR lifecycle - maintained systems included: topic development, proposal submission, company commercialization, awards, commercialization pilot program, and data exchange;

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605790D8Z: *SBIR/Challenge Admin*	PROJECT P518: *SBIR/Challenge Admin*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
3) Implemented an aggressive outreach program - developed and implemented outreach materials, hosted a three day training workshop (300 attendees), host a three day Beyond Phase II Conference and Technology Showcase (525 attendees), maintained a SBIR/STTR Help Desk responding to 5,168 inquiries, maintained an online desk reference manual, administered SBIR/STTR Interactive Topic Information System (SITIS), and maintained mailing lists (ListServ) targeting specific outreach groups; 4) Coordinated oversight, collected results, tracked execution and provided reporting of Phase III technology transition management and support of the DoD SBIR Commercialization Pilot Program (CPP) (section 252 of the NDAA for FY 2006) - managed and maintained the CPP database and provided data for draft annual CPP Report; and 5) Prepared all reports required of the SBIR/STTR Programs as mandated by law and policy - Annual SBIR/STTR Report, Energy Independence and Security Acct Report, Nanotechnology Reports, and Encouraging Innovation in Manufacturing Report. ***FY 2011 Plans:*** (U) FY 2011 plan includes program administration, coordination and execution of the DoD SBIR/STTR Program. Specifically, manage the execution of the FY 2011 DoD SBIR/STTR budget between 11 DoD Components to include: 1) Coordinate and execute the administrative portions of the DoD SBIR/STTR Programs; 2) Maintain and modify automated processes across the entire SBIR/STTR lifecycle; 3) Implement an aggressive outreach program; 4) Coordinate oversight, collect results, track execution and provide reporting of Phase III technology transition management and support of the DoD SBIR Commercialization Pilot Program (CPP) (section 252 of the NDAA for FY 2006); and 5) Prepare all reports required of the SBIR/STTR Programs as mandated by law and policy. ***FY 2012 Plans:*** (U) FY 2012 plan includes program administration, coordination and execution of the DoD SBIR/STTR Program. Specifically, manage the execution of the FY 2012 DoD SBIR/STTR budget between 11 DoD Components to include: 1) Coordinate and execute the administrative portions of the DoD SBIR/STTR Programs; 2) Maintain and modify automated processes across the entire SBIR/STTR lifecycle; 3) Implement an aggressive outreach program; 4) Coordinate oversight, collect results, track execution and provide reporting of Phase III technology transition management and support of the DoD SBIR Commercialization Pilot Program (CPP) (section 252 of the NDAA for FY 2006); and 5) Prepare all reports required of the SBIR/STTR Programs as mandated by law and policy.			
Accomplishments/Planned Programs Subtotals	2.056	2.189	1.924

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605790D8Z: *SBIR/Challenge Admin*	**PROJECT** P518: *SBIR/Challenge Admin*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

(U) Performance is in support of the administration of the program and compliance with statutory requirements.

(U) For PE 0605790D8Z, management and administration of the DoD SBIR/STTR Programs, the following measures have been established to meet requirements as mandated by law: 1) Coordinate and execute the administrative portions of the DoD SBIR/STTR Programs; 2) Maintain and modify automated processes across the entire SBIR/STTR lifecycle; 3) Develop and conduct an aggressive outreach program; 4) Coordinate oversight, collect results, track execution and provide reporting of Phase III technology transition management and support of the DoD SBIR Commercialization Pilot Program (CPP) (section 252 of the NDAA for FY 2006); and 5) Prepare all reports required of the SBIR/STTR Programs as mandated by law and policy.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0605798D8Z: *Defense Technology Analysis*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	12.108	13.858	16.135	-	16.135	13.172	13.094	13.397	14.074	Continuing	Continuing
P796: *Laboratory Resource Management*	-	4.000	5.179	-	5.179	5.200	5.300	5.400	5.500	Continuing	Continuing
P797: *Defense Technology Analysis*	6.982	6.358	7.656	-	7.656	4.872	4.894	5.297	6.074	Continuing	Continuing
P798: *DDR&E Support Teams*	5.126	3.500	3.300	-	3.300	3.100	2.900	2.700	2.500	Continuing	Continuing

Note

The Laboratory Resource Management project (P796) is a new effort in FY 2011 within the Defense Technology Analysis program element.

A. Mission Description and Budget Item Justification

The Director, Defense Research and Engineering (DDR&E) is the principal staff advisor to the Under Secretary of Defense for Acquisition, Technology & Logistics (USD(AT&L)) and the Secretary and Deputy Secretary of Defense for research and engineering (R&E) matters. In this capacity, the DDR&E has the responsibility to conduct analysis and studies; develop policies; provide technical leadership, oversight and advice; make recommendations; and issue guidance for DoD R&E programs. Additionally, the DDR&E provides technical support to the USD(AT&L) on R&E aspects of programs subject to review by the Defense Acquisition Board, to include assessments of technology maturity consistent with DoD acquisition policy. The mission of the DoD R&E program is to create, demonstrate, prototype, and apply technology that enables affordable and decisive military superiority. Pursuing the R&E mission requires attention to: identification and development of new technological opportunities; insertion of new technologies into warfighting systems and operations; and management and evaluation of the effectiveness of technology programs. This program element provides mission support to the Office of the DDR&E (ODDR&E). It covers a wide range of studies and analysis in support of the R&E program and it impacts the Department's decision to fund RDT&E efforts.

The program element provides funding for the Defense Laboratory Office in the ODDR&E. The Defense Laboratory Office advocates and invests in the DoD laboratory system in three areas: facilities and infrastructure; quality of workforce; and global insight of critical or strategic technologies important to DoD and the Nation.

The program element also provides engineering, scientific, and analytical support to the Office of the Director, Research in its responsibility for direction, overall quality, and content of the science and technology (S&T) program and ensures that the technology being developed is affordable and minimizes system development risk. The Defense Technology Analysis program conducts assessments and analysis to ensure maximum utilization of research and development funds to accomplish the overall objectives of the S&T program. The Weapons Systems Acquisition Reform Act (WSARA) of 2009 expanded the role of the DDR&E in acquisition decisions. Full implementation of the Act requires increases in both the number and depth of technology maturity assessments. FY 2012 funding reflects WSARA requirements. Funds are required for technical, analytical and management support, equipment and supplies, travel, and publications.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605798D8Z: *Defense Technology Analysis*

The DoD's key expertise for reviewing and guiding R&E programs resides in the ODDR&E. The ODDR&E staff augments their responsibilities through their connections to technology experts in various fields throughout academia, industry, and government. The DDR&E Support Teams project supports the directed responsibilities by building teams of technology experts to conduct program technical assessments. The teams analyze the key engineering problem areas and offer adjustments in the development and test plan; alternate technical approaches; or new technologies that could enable successful development. The teams constitute expert non-advocate reviews and gather advice from the Nation's leading technical experts.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	11.710	13.858	15.672	-	15.672
Current President's Budget	12.108	13.858	16.135	-	16.135
Total Adjustments	0.398	-	0.463	-	0.463
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	0.745	-			
• SBIR/STTR Transfer	-0.330	-			
• Other Program Adjustments	-0.017	-	-	-	-
• Internal Adjustments	-	-	5.702	-	5.702
• Defense Efficiency - Baseline Review	-	-	-1.332	-	-1.332
• Defense Efficiency – Report, Studies, Boards and Commissions	-	-	-1.508	-	-1.508
• Defense Efficiency – Civilian Staffing Reduction	-	-	-0.500	-	-0.500
• Defense Efficiency – Contractor Staff Support	-	-	-1.870	-	-1.870
• Economic Assumptions	-	-	-0.029	-	-0.029

Change Summary Explanation

The FY 2012 internal adjustment is derived from an increase in emphasis for Defense Laboratory Resource Management.

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605798D8Z: *Defense Technology Analysis*

Defense Efficiency – Civilian Staffing Reduction. As part of the Department of Defense reform agenda, eliminates civilian full-time equivalent positions to maintain, with limited exceptions, civilian staffing at the FY 2010 level.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605798D8Z: *Defense Technology Analysis*	PROJECT P796: *Laboratory Resource Management*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P796: *Laboratory Resource Management*	-	4.000	5.179	-	5.179	5.200	5.300	5.400	5.500	Continuing	Continuing
Quantity of RDT&E Articles											

Note

The Laboratory Resource Management project (P796) is a new effort in FY 2011 within the Defense Technology Analysis program element.

A. Mission Description and Budget Item Justification

The Defense Laboratory Office provides advocacy, strategic planning, and policy for the DoD's in-house laboratories. The DoD laboratory enterprise consists of 67 laboratories with approximately 65,000 employees and an annual budget of more than 20 billion dollars. The Laboratory Office will develop plans and investment strategies for laboratory infrastructure, technology programs, and personnel development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Defense Laboratory Office	-	4.000	5.179
FY 2010 Accomplishments: Not applicable. The Defense Laboratory Office is a new effort in FY 2011.			
FY 2011 Plans: The DDR&E/Research Directorate Laboratories Office will refine and execute the strategic plan developed in FY 2010. Areas of emphasis include: • Identification of Department-wide Laboratory In-House CTCs; • Understanding Service and laboratory performance within CTCs; • Ensuring that CTCs are performing at the cutting-edge of global science, technology, and engineering; • Advocacy for investment in CTCs; and • Measurement of performance of the Defense laboratory enterprise. DoD Lab CTCs will be derived from COCOM S&T Planning Scenarios, Quadrennial Defense Review Technology Area Studies, Intelligence Community products, Technology Horizon Scanning, DDR&E Basic Research Plan, DDR&E Strategic Plan, and DoD/Service strategic plans. Laboratory fiscal information and program execution will be collected via the Defense Technical Information Center (DTIC) R&E database. During FY 2010, the Laboratory Office, in partnership with DTIC, developed a new data structure and architecture which will facilitate the gathering and subsequent analysis of relevant information. This new database architecture represents a consolidation of the existing R&E, Work Unit Summary, and in-house S&T report databases and will be executed in FY 2011. From the analysis, the Laboratory Office will be able to track the status of the DoD laboratory enterprise's			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605798D8Z: *Defense Technology Analysis*	PROJECT P796: *Laboratory Resource Management*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
program performance in support of the CTCs. DDR&E will team with the Services to determine modifications of programs and investments to ensure alignment of the laboratory enterprise with DoD technology goals. ***FY 2012 Plans:*** The DDR&E/Research Directorate Laboratories Office will refine and continue to execute the strategic plan developed in FY 2010. Areas of emphasis include: • Continued identification and validation of Department-wide DoD Laboratory In-House core technical competencies (CTC); • Understanding Service and laboratory performance within CTCs; • Ensuring that CTCs are performing at the cutting-edge of global science, technology, and engineering; • Advocacy for investment in CTCs; and • Measurement of performance of the Defense Laboratory Enterprise.			
Accomplishments/Planned Programs Subtotals	-	4.000	5.179

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

The performance of the Laboratory Resource Management project is based on the success of initiatives to implement stragegic planning objectives. Measures include the quality and timeliness of policy, plans, guidance, and processes.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605798D8Z: *Defense Technology Analysis*	PROJECT P797: *Defense Technology Analysis*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P797: *Defense Technology Analysis*	6.982	6.358	7.656	-	7.656	4.872	4.894	5.297	6.074	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Defense Technology Analysis (DTA) project provides engineering, scientific and analytical support to the Office of the Director, Research in its responsibility for direction, overall quality, and content of the S&T program and ensures that the technology being developed is affordable and minimizes system development risk. The DTA program conducts assessments and analyses to ensure maximum utilization of research and development funds to accomplish the overall objectives of the S&T program. The WSARA of 2009 expanded the role of the DDR&E in acquisition decisions. Full implementation of the Act requires increases in both the number and depth of technology maturity assessments. FY 2012 funding reflects WSARA requirements. Funds are required for technical, analytical, and management support, travel, and publications.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: DoD Technology Analysis	6.982	6.358	7.656
FY 2010 Accomplishments: The DTA program funded over 40 efforts in FY 2010. The funded efforts were primarily technical and programmatic support using Federally Funded Research and Development Centers (FFRDCs) and technical support services. Activities included workshops, development of congressional reports, completion of focused studies, and access to technical expertise in support of the DoD R&E program.			
FY 2011 Plans: Provide engineering, scientific, analytical, and managerial support to the Office of the Director, Research in: • Developing strategies, plans, and policies to develop and exploit technology; • Conducting technology analyses, making recommendations, and developing guidance for S&T plans and programs; • Reviewing acquisition programs and making recommendations to optimize effectiveness of the DoD investments; and • Oversight of S&T issues and initiatives and responding to Congressional special interests. Seek opportunities for interdepartmental and international cooperation in high priority S&T. Conduct intradepartmental coordination to achieve goals as necessary.			
FY 2012 Plans: Provide engineering, scientific, analytical, and managerial support to the Office of the Director, Research in: • Developing strategies, plans, and policies to develop and exploit technology;			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605798D8Z: *Defense Technology Analysis*	PROJECT P797: *Defense Technology Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Conducting technology analyses, making recommendations, and developing guidance for S&T plans and programs; • Reviewing acquisition programs and making recommendations to optimize effectiveness of the DoD investments; and • Oversight of S&T issues and initiatives and responding to Congressional special interests. Seek opportunities for interdepartmental and international cooperation in high priority S&T. Conduct intradepartmental coordination to achieve goals as necessary.			
Accomplishments/Planned Programs Subtotals	6.982	6.358	7.656

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Several indicators allow the Department to measure the success of the DTA program element:

• The number of efforts funded and completed satisfactorily and the ODDR&E's influence on S&T program decisions serve as valuable indicators of the program's effectiveness.

• Feedback into the oversight mechanisms of the program to guide investment decisions serve as additional metrics.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605798D8Z: *Defense Technology Analysis*	PROJECT P798: *DDR&E Support Teams*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P798: *DDR&E Support Teams*	5.126	3.500	3.300	-	3.300	3.100	2.900	2.700	2.500	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Department's key expertise for reviewing and guiding R&E programs resides in the ODDR&E. The ODDR&E staff augments their responsibilities through connections to technology experts in various fields throughout academia, industry, and government. The DDR&E Support Teams project supports the directed responsibilities by building teams of technology experts to conduct program technical health check-ups. The teams analyze the key engineering problem areas and offer adjustments in the development and test plans; alternate technical approaches; or new technologies that could enable successful development. The teams constitute expert non-advocate reviews and gather advice from the Nation's leading technical experts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: DDR&E Support Teams	5.126	3.500	3.300
FY 2010 Accomplishments: Established support teams and conducted technology analyses to support R&E program investment decisions. Continued or completed teams established in FY 2009. Reviewed in technical detail the respective program issues and offered technical solutions to program managers. Assessed the maturity of technology transitioning to an acquisition program for efficient and timely fielding of improved military systems. Efforts supported 27 support teams.			
FY 2011 Plans: Establish support teams and conduct technology analyses to support R&E program investment decisions. For selected acquisition programs and efforts, review in technical detail the respective program issues and offer technical solutions to program managers. Assess the maturity of technologies that are candidates for transitioning to an acquisition program.			
FY 2012 Plans: Establish support teams and conduct technology analyses to support R&E program investment decisions. For selected acquisition programs and efforts, review in technical detail the respective program issues and offer technical solutions to program managers. Assess the maturity of technologies that are candidates for transitioning to an acquisition program.			
Accomplishments/Planned Programs Subtotals	5.126	3.500	3.300

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605798D8Z: *Defense Technology Analysis*	PROJECT P798: *DDR&E Support Teams*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Several indicators allow the Department to measure the success of the DTA program element:

• The number of technological introspections as evidenced by completed support teams and DDR&E's influence on acquisition decisions serve as valuable indicators of the program's effectiveness.

• The establishment and outputs of Defense Support Teams and Joint Analysis Teams are additional indicators of program metrics.

• Feedback into the oversight mechanisms of the S&T program to guide investment decisions serve as additional metrics.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	34.821	19.701	-	-	-	-	-	-	-	Continuing	Continuing
P799: *Emerging Capabilities*	34.821	19.701	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

This funding request supports the development of emerging capabilities under the Director of Defense Research & Engineering's Rapid Reaction Technology Office (RRTO). These funds are used to advance technical capabilities in mutual areas of interest through focused partnerships and projects with other federal departments and agencies. In addition to supporting interagency cooperation, this PE incubates selected concepts and technologies of interest to joint warfighters and their interagency partners to provide mature options as capability needs emerge in and beyond the Future Years Defense Plan (FYDP). This includes developing risk-reducing prototypes to demonstrate capabilities in response to joint warfighter and interagency partners' shared requirements; and informing the Joint Capabilities Integration & Development System (JCIDS) and acquisition system through technical demonstrations. Individual projects are developed and funded with interagency partners over a two to three year period – products are demonstrated and fielded in spirals within that project timeline – and generally do not include stand-alone studies. Funding for this Program Element (PE) permits support for four to five major projects per year. Typically, these projects support mid-term irregular warfare needs aligned with those of interagency partners, and often supports near term capability needs in support of the Department's Rapid Fielding efforts. This program element has evolved from exclusive support of force transformation activities to the activities described above, more closely aligned with departmental goals. This PE will transition from PE 0605799D8Z to PE 0603699D8Z in FY 2012.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	23.787	19.701	20.890	-	20.890
Current President's Budget	34.821	19.701	-	-	-
Total Adjustments	11.034	-	-20.890	-	-20.890
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	11.550	-			
• SBIR/STTR Transfer	-0.486	-			
• Program transfer to PE 0603699D8Z	-	-	-20.890	-	-20.890
• Other internal adjustment	-0.030	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P799: *Emerging Capabilities*		

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605799D8Z: *Emerging Capabilities*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Congressional Add: *Prototype Rigid Aeroshell Variable Buoyancy (RAVB) Air Vehicle - Project Pelican*	4.000	-
Congressional Add Subtotals for Project: P799	4.000	-
Congressional Add Totals for all Projects	4.000	-

Change Summary Explanation

The FY 2010 funding amount reflects a congressionally approved reprogramming directed toward the accelerated development of the Enhanced Mortar Targeting System (EMTS).

In FY 2012, resources from PE 0605799D8Z are transferred to PE 0603699D8Z to execute the same mission but under a different Budget Activity (BA 3). Alignment under this new program element is more reflective of DOD priorities and mission intent.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*	PROJECT P799: *Emerging Capabilities*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P799: *Emerging Capabilities*	34.821	19.701	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Emerging Capability (EC) funding is utilized to develop emerging capabilities under the Director of Defense Research & Engineering's Rapid Reaction Technology Office (RRTO). EC projects seek to advance technical capabilities in mutual areas of interest through focused partnerships and projects with other federal departments and agencies. In addition to supporting interagency cooperation, this Program Element (PE) incubates selected concepts and technologies of interest to joint warfighters and interagency partners to provide mature options as capability needs emerge in and beyond the Future Years Defense Plan (FYDP). EC projects will inform the Joint Capabilities Integration & Development System (JCIDS) and acquisition system through technical demonstrations which include: developing risk-reducing subsystems and prototypes, integrating new technologies for field and operational experiments, and demonstrating capabilities in response to joint warfighter and interagency partners' shared requirements. Projects are in support of mid-term irregular warfare needs aligned with those of interagency partners, and often support near term capability needs in support of the Department's rapid fielding efforts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Law Enforcement Capabilities Project	0.600	1.000	-
Description: The Law Enforcement Capabilities Project is advancing current thinking on the nature of, and need for, law enforcement capabilities across DoD, the Services and the interagency to support complex warfighting, conflict resolution, stabilization and reconstruction. This project is identifying and describing specific capabilities relevant to enhancing military cooperation with law enforcement agencies and further improve the interagency cooperation initiated during Transitional Law Enforcement. The payoff will be the development of a series of tools to enhance the capabilities of military, law enforcement agencies and their mutual interaction. It will also identify specific (technological and organizational) capabilities to further develop this capability in the future.			
FY 2010 Accomplishments: Accomplishments included a series of table-top exercises to further concept development. The paper produced as a result of the Lessons Learned workshop series was accepted for publication as a monograph by the U.S. Army Strategic Studies Institute. The first FY 2010 table top exercise explored law-enforcement support to military operations and produced a handbook that is currently in staffing to be published as a U.S. Marine Corps manual. The second FY 2010 table-top exercise developed the overarching concepts regarding police/rule of law capacity building for the Department of Justice/Criminal Division to publish as a capstone capacity building manual. The third table top-exercise was conducted in conjunction with the U.S. Institute for Peace			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*	PROJECT P799: *Emerging Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
to develop a common lexicon and operational framework for stability policing in order to inform U.S. Government (USG) policy development. ***FY 2011 Plans:*** Current plans call for two additional table-top exercises. The first will assess the operational validity of several different organizational options for the USG. The second will examine the potential logistics support required from DoD in support of each of the different options.			
Title: Gunslinger Package for Advanced Convoy Security (GunPACS) ***Description:*** The GunPACS is a system built on the U.S. Marine Corps Medium Tactical Replacement Vehicle (MTRV) platform that provides enhanced situational awareness and cooperative engagement capabilities for ground and combat logistics elements in Afghanistan. This technology provides accurate targeting solutions to small unit and logistics convoy vehicle crews enabling them to effectively engage hostile shooters with remote weapons while remaining under armor. The objective of this effort is to provide clear, unambiguous data on the location of hostile forces in the vicinity of the small unit equipped with the GunPACS system. GunPACS utilizes 360-degree camera coverage, acoustic shot detection, and networked data fusion technology to determine shooter location information. This information is used by the operators to designate targets for the remote weapons mount to enable vehicle crews to engage hostiles while remaining under armor. Networked data fusion allows for a cooperative engagement capability, providing for more accurate and effective responses to hostile activities. Additionally, an organic ability of convoy units to defend themselves reduces the need for additional combat support for logistics convoys, potentially freeing those assets for active combat operations. ***FY 2010 Accomplishments:*** Prototype vehicles were utilized by Marine units as they prepared for deployment to Afghanistan in September 2010. The units deployed with the capability and are utilizing them in combat operations. ***FY 2011 Plans:*** Deployment to Afghanistan will span the fiscal year and will inform the development of subsequent spirals/advancement of the capability. Based on the current level of interest by the Marine Corps, it's anticipated this program will transition to the Marines in FY 2011 or early FY 2012.	0.900	1.000	-
Title: Humanitarian Assistance/Disaster Response Capability Development effort ***Description:*** As witnessed in Haiti, during Hurricane Katrina, and with the Asian Tsunami, coordinating the international community's emergency responses remains an unsolved – yet critical - challenge. Without a shared diagnosis of the problem space and an assessment of the resources available to address that problem space, the unity of effort needed to effectively	0.700	1.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*	PROJECT P799: *Emerging Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
respond in a crisis environment will remain elusive. While all responding organizations share a common intent, to save lives and alleviate the suffering of those affected by these events, this intent is delivered with different end states, timeframes and capabilities in mind. These perspectives differ markedly between military, government and non-government organizations. In previous humanitarian responses this has led to a lack of unity amongst various responders and the host nation government, resulting in a time gap between quickly available financial, human, and relief resources and their application to problems faced on the ground. This project seeks to determine how unity of effort can be achieved to help close the gap between identifying resources and their rapid utilization. The first phase involved a workshop focused on the development and broad application of technological solutions coupled with sound operational concepts. The workshop sought to ask and answer the fundamental questions: In a fast onset disaster, how do we generate unity of effort amongst all actors when unity of command is neither possible nor desirable and what technologies can contribute to this effort? ***FY 2010 Accomplishments:*** Two joint and interagency workshops were conducted to identify methodological and technical solutions to the identified problem. The first workshop was completed in conjunction with U.S. Pacific Command (PACOM), Marine Corps Forces Pacific (MARFORPAC), other joint representation as well as Non-Governemental Organizations (NGO) and international organization participation. The second workshop was completed with Southern Command (SOUTHCOM) and participants similar to the first workshop. ***FY 2011 Plans:*** Complete the development of a prototype crowd sourcing system and conduct a series of operational evaluations potentially in the SOUTHCOM Area of Operations (AOR).			
Title: Building Effective States ***Description:*** The problem of failing and failed states is increasingly recognized as a key challenge in the contemporary world, lying at the root of global insecurity. Currently there are estimated to be some 40 to 60 countries that fall short of standards of state functionality, including but not limited to Afghanistan, Pakistan, Iraq, Somalia, Yemen, Haiti and Sudan. There has been increasing recognition within the Office of the Secretary of Defense (OSD) and the broader interagency of the need to develop a USG approach to realize the concepts articulated by the Institute for State Effectiveness (ISE). Given the strong demand at senior levels throughout government and a present deficit within USG of actionable tools for effective institution building, this project is a critical next step to define the operational technologies, templates and tools required to facilitate implementation. The project initiated in late FY 2010. The project will deliver: a mapping of existing capabilities across stakeholders; an identification of the capabilities required (including but not limited to identification of actors, partnerships, roles and responsibilities); a simulation of successful transition in unstable regional/country context, documented how-to implement the ISE framework for USG entities.	0.200	1.000	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*	PROJECT P799: *Emerging Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Initial assessment of the existing frameworks/assessment tools was completed. ***FY 2011 Plans:*** An application of the framework and methodology to a specific country in order to develop a cohesive country specific plan to rectify/address the challenges resident within that particular country. Once complete, the results will be presented to various USG officials/agencies for validation and wider application.			
Title: Enhanced Mortar Targeting System (EMTS) ***Description:*** Existing Forward Operating Base (FOB) defense systems currently provide only the capability to detect, provide warning, and assess potential threats. At smaller, more remote locations, the kinetic response capability is limited only to existing organic weapon systems, which can become overwhelmed, or to supporting arms which may be unavailable due to weather, competing requirements or Rules of Engagement (ROE). In addition, mortar crews are routinely exposed to enemy fire and/or unable to man their system due to enemy action. The integration of a more robust response capability into detect/ warn/assess systems will enhance the capability of small units/FOBs to defend themselves, which in turn enables greater tactical flexibility. This project is augmenting current kinetic capabilities available to units occupying small FOBs by, in the near term, providing the capability for precision mortar fire and, in the longer term, integrating this system and other weapons with existing and future sensors in order to maximize current capabilities and accelerate the development of future FOB defense technologies. The EMTS will provide rapid, 360° indirect fire capability from a single firing position using an integrated fire control system and an electronic drive which provides auto-laying capability at a traverse rate of 15 degrees per second. The mortar will use either 120mm or 81mm US standard mortar tubes and provide an accuracy of 1% of range (e.g. 30 meters at 3 kilometers). The project seeks an end state where next generation FOB defense capabilities are integrated with a robust, precise, kinetic response scalable for application to FOBs ranging from sub-platoon to company sized locations. ***FY 2010 Accomplishments:*** The mortar systems have completed safety certification. Up to 20 mortar systems will be fielded to Afghanistan for operational evaluation in early FY 2011. ***FY 2011 Plans:*** Operational evaluation of 20 mortar systems enabled by Congressionally reprogrammed funds in the amount of $12.100 million will continue throughout the fiscal year. User feedback on the system and employment techniques, tactics and procedures (TTPs) will be captured and documented to inform future spirals and the development of doctrine guiding the employment of the system. Initial integration of the system with currently fielded sensor systems will begin.	13.200	1.000	-
Title: Interagency Border Security	0.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*	PROJECT P799: *Emerging Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The primary current venue for exploring/developing interagency capabilities centers on a collaborative effort with Joint Task Force-North (JTF-N) to explore and develop multiple types of sensors designed to improve information gathering and sharing across numerous agencies. JTF-N will be conducting multiple border security operations throughout the year designed to identify, interdict, disrupt, and prosecute organized criminal elements operating along the United States borders. These operations will typically involve numerous partner organizations including the Department of Homeland Security, Department of Justice, the US Coast Guard, Customs and Border Patrol as well as state and local law enforcement agencies. Beginning in FY 2010, participating organizations will conduct operational evaluation of multiple new sensors provided under the umbrella of Project Overwatch in order to enhance situational awareness, planning ability and intelligence gathering capability. The multi-sensor technology applications will facilitate synchronization of interagency operations, and enable better sharing of information and intelligence. ***FY 2010 Accomplishments:*** The operational evaluation of multiple sensor applications began in February with JTF-N's Operation Greenflash. The evaluated capability transitioned to a USG entity assisting in border security and the project was closed out.			
Title: Marine Systems: Stiletto ***Description:*** Stiletto was developed to provide the DoD a dedicated operational Research and Development (R&D) maritime platform. Although the craft incorporates experimental naval architecture to explore the scalability of non-mechanical dynamic lift, carbon fiber construction, and high speed performance for military operations, it's the craft's electronic keel and associated craft characteristics (e.g., covered payload space, Unmanned Aerial Vehicle (UAV) flight deck, shallow draft, and ability to easily integrate Command, Control, Communications, Computers, Intelligence (C4I) systems) that provides Stiletto her agile R&D capabilities. The electronic keel was designed to be flexible, modular and re-configurable to support near plug-and-play installation of C4I equipment used as part of experimentation. In addition to testing C4I equipment, Stiletto is ideally suited for operational experimentation and has tested unmanned systems, sensors, and coastal warfare concepts of operations for various commands and agencies. The Stiletto vessel is homeported in Norfolk, Virginia at the Combatant Craft Division of the Naval Surface Warfare Center (NSWC), Carderock. ***FY 2010 Accomplishments:*** During the 1Q of FY 2010, a material assessment of the Stiletto program was completed where options for future vessel utilization were explored. With positive results from the material assessment, a decision was made to maximize Stiletto's use as a maritime experimentation platform with a focus on the current needs and future threats that exist in an irregular warfare environment. The Naval Air Warfare Center's Irregular Warfare group, partnered with the NSWC, Combatant Craft Division, and OSD has moved toward the utilization of Stiletto as a key enabling maritime platform for rapid experimentation, demonstration, and prototyping.	1.600	2.793	-

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*	PROJECT P799: *Emerging Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
In FY 2010, work was completed to upgrade Stiletto's electronic keel to allow for easy and flexible adaptation and integration of C4I equipment. Eleven individual demonstrations were completed in FY 2010 aboard Stiletto. During FY 2010, the launch and recovery of AAI Corporation's Aerosonde 4.7 UAV was accomplished with testing at sea less than six weeks from initial discussions with AAI. As an effort to reach out to potential industry partners, Stiletto participated in the Sea-Air-Space and Ocean Tech expositions where over 400 visitors boarded information briefs. The result was several requests to support rapid prototyping demonstrations in a maritime environment. A host of additional demonstrations were completed in FY 2010 including the capture and release testing of an 11-meter Rigid Hull Inflatable Boat (RHIB) for the Littoral Combat Ship (LCS) program; electronics testing in support of the Space and Naval Warfare Systems Center demonstration of a mesh network for the command and control of unmanned surface vessels; and planning and integration for the Blue Dragon Maritime Domain Awareness demonstration in support of the National Maritime Intelligence Center. ***FY 2011 Plans:*** The Stiletto maritime experimentation platform project will continue operational experimentation through FY 2011 with participation in the Irregular Warfare Innovation Cell's Blue Dragon demonstration. Blue Dragon is a technology demonstration project between the National Maritime Intelligence Center, Naval Air Warfare Center Aircraft Division and NSWC's Combatant Craft Division. Blue Dragon will feature Stiletto as a "mothership" in conjunction with a family of maritime Intelligence, Surveillance, and Reconnaissance (ISR) sensors and platforms to advance state of the art in the Maritime Domain Awareness arena. Testing in support of the Combatant Commanders (COCOMs), service, and interagency will continue.			
Title: Griffin Cooperative Autonomy Demonstration Program ***Description:*** Griffin leverages the Navy's Autonomous Maritime Navigation program to develop and install autonomous command and control systems and integrate the associated sensors on maritime platforms. The goal is to provide a system that is capable of supporting a patrol mission with minimal human interaction, until a target of interest is identified, at which time the system can either interrogate the target autonomously with its sensors, or request operator support for interacting with the target. There is no other fully functional autonomous unmanned surface vessel (USV) within DoD nor a system by which autonomous unmanned systems are able to act cooperatively. Unmanned systems represent a large growth area for the warfighter, but currently require a greater logistics and personnel footprint than a similarly capable manned system. This effort worked with cutting edge technologies to minimize human-machine interaction during the mission phase, while still producing high quality ISR data. This will reduce manning requirements, allowing the tender vessel/station to conduct normal operations while the USV is conducting its assigned mission. ***FY 2010 Accomplishments:***	1.000	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*	PROJECT P799: *Emerging Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The primary accomplishment in FY10 was the final integration of sensors and perception software, and demonstration in Trident Warrior '10 (TW10) in San Diego, California. During TW10, Griffin demonstrated autonomous flexibility by converting a standard Navy Rigid Hull Inflatable Boat (RHIB) into an autonomous USV capable of cooperative autonomy with a previously configured USV and provided persistent surveillance and high value unit escort while providing relevant information to the expeditionary commander via an adhoc expeditionary wide-area network.			
Title: Prototype Rigid Aeroshell Variable Buoyancy (RAVB) Air Vehicle - Project Pelican	8.100	8.000	-
Description: Project Pelican is a non-deployable airship technology demonstrator that integrates independent technologies into a single, rigid aeroshell variable buoyancy (RAVB) vehicle. Pelican will demonstrate the technical maturity of a scalable vertical takeoff and landing aircraft. Key technologies to be demonstrated include a buoyancy management system to enable ballast-independent operations, composite lightweight rigid external structure, a responsive low-speed/hover control system, and a ground handling subsystem to enable operations on unimproved landing surfaces. The program seeks to reduce risk by integrating and demonstrating a suite of technologies with the potential to reduce operational constraints on future heavy-lift, buoyant-aircraft development programs. Success may lead to a nascent class of air vehicle which will radically reduce energy use per tonmile, permit high-payload operations in austere regions with little infrastructure, and enable long-endurance manned or unmanned air operations. RAVB aircraft appear to be scalable to payloads of 500-1,000 tons (compared with payloads in the 125-ton range for the largest current US cargo aircraft). In addition, RAVB aircraft may also reduce need for intermodal transportation as cargo moves from origin to point of need, with corresponding reduction in delivery times. Project Pelican is a five-year program. The first three years consist of vehicle design, analysis, and subsystem prototyping/ testing. Year four involves systems integration and construction. Ground and flight testing are planned in year five. Pelican is an interagency effort between the Department and the National Aeronautics and Space Administration Ames Research Center. ***FY 2010 Accomplishments:*** The government team conducted several in-progress design reviews of the proposed RAVB air vehicle. The contractor successfully completed several subsystem component prototypes and tests to include primary structural load path, truss frame elements, propulsion unit, buoyancy management components, low speed flight control system, landing system, cockpit layout, and vehicle control units. In addition, the contractor assembled the main internal framework of the rigid structure and initiated risk reduction efforts toward suitable aeroshell skin development. ***FY 2011 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*	PROJECT P799: *Emerging Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
During 1Q FY 2011 a successful test of the variable buoyancy system was completed. During the remainder of FY 2011 the contractor plans to continue several subsystem design and integration tests and begin overall vehicle system level integration. Periodic in-progress design reviews will continue.			
Title: Thunderstorm	4.121	3.908	-
Description: A follow-on to RRTO's "Bluegrass" efforts, Thunderstorm has established an enduring multi-platform, multi-sensor Intelligence Surveillance and Reconnaissance (ISR) test bed using Southern Command's (SOUTHCOM) Joint Interagency Task Force South (JIATF-S) as an operational venue to conduct operational experiments with next generation detection, cueing, monitoring, tracking, and handoff capabilities against asymmetric target sets. JIATF-S was chosen because the Irregular Warfare environment is similar to Iraq and Afghanistan (i.e., non-state actors, ad hoc networks, and an adaptive enemy), but is not as operationally stressing. The availability of operational intelligence architectures coupled with a true interagency, multi-national organizational construct make JIATF-S a realistic environment to vet capabilities prior to deployment to more stressing operational environments. In addition to providing relevant intelligence to support JIATF-South operations, Thunderstorm will also encourage greater cooperation with multi-agency/multinational partners, and identify improvements in ISR concepts of operations that can be exported for other Areas of Responsibility (AORs) to leverage. OSD will make Thunderstorm exercise data available to facilitate government and industry requirements and capabilities development. ***FY 2010 Accomplishments:*** Thunderstorm expanded to include operational experiments in JIATF-S, but also supported JTF-N on the Arizona/Mexico border area using developmental airborne ISR capabilities being evaluated for theater deployment. Use of the Southwest Border region replicated the terrain found in the Afghanistan/Pakistan border areas, making the area ideal for evaluating ISR systems. November 2009: The Vehicle and Dismount Exploitation RADAR (VADER) demonstrated the utility of a Ground Moving Target Indicator (GMTI) system on the Southwest Border. The demonstration was conducted in cooperation with Customs and Border Protection (CBP) Predator and Border Agents. The operational demonstration was invaluable in helping VADER developers refine CONOPS prior to its expected deployment to Afghanistan in FY2011. March 2010: Thunderstorm Spiral 3 was conducted in the Western Caribbean region 70 miles off shore between Honduras and Nicaragua. The focus was to demonstrate proper sensor management of several intelligence capabilities and then fuse the data into a single display for JIATF-S analysts' evaluation. Participants included multiple USG agencies. The Thunderstorm ISR			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*	PROJECT P799: *Emerging Capabilities*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
architecture approach is informing Counter Improvised Explosive Device (IED) Senior Integration Group (CSIG) ISR architectural assessments. The lessons learned and data from Spiral 3 have been widely disseminated to aid in development of future capabilities and ISR architecture. ***FY 2011 Plans:*** Thunderstorm will continue to include all of SOUTHCOM (not just JIATF-S AOR and mission sets) and will continue using the U.S. Southern (and possibly Northern) border regions to evaluate Irregular Warfare ISR capabilities. Thunderstorm Spiral 4 will be conducted in the U.S. Southwest Border region for intelligence operational demonstrations. Thunderstorm may also extend to other Combatant Commanders' as Pacific Command (PACOM). The goal is to conduct two Thunderstorm exercise spirals in FY 2011.			
Accomplishments/Planned Programs Subtotals	30.821	19.701	-

	FY 2010	FY 2011
Congressional Add: Prototype Rigid Aeroshell Variable Buoyancy (RAVB) Air Vehicle - Project Pelican	4.000	-
FY 2010 Accomplishments: The government team conducted several in-progress design reviews of the proposed RAVB air vehicle. The contractor successfully completed several subsystem component prototypes and tests to include primary structural load path, truss frame elements, propulsion unit, buoyancy management components, low speed flight control system, landing system, cockpit layout, and vehicle control units. In addition, the contractor assembled the main internal framework of the rigid structure and initiated risk reduction efforts toward suitable aeroshell skin development.		
Congressional Adds Subtotals	4.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the specific project plans. In addition, project completions and success are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target dates, production measures, fielding dates, and demonstration goals and dates. Generic performance metrics applicable to Emerging Capabilities includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on warfighting needs" and the metrics for this objective is to transition 30% of completing

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*	PROJECT P799: *Emerging Capabilities*

demonstrations program per year. During FY 2010 Emerging Capabilities achieved a transition rate of 100% for three completing projects, and exceeded the 30% objective.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0605804D8Z: *Development Test & Evaluation*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	33.115	18.688	15.805	-	15.805	16.053	16.666	17.276	17.834	Continuing	Continuing
P804: *Development Test & Evaluation*	28.973	17.195	15.805	-	15.805	16.053	16.666	17.276	17.834	Continuing	Continuing
P805: *Software Engineering and System Assurance*	2.602	-	-	-	-	-	-	-	-	Continuing	Continuing
P806: *Energy*	1.540	1.493	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Developmental Test and Evaluation program element is budgeted in the Research and Development budget activity because it supports and assesses the DT&E efforts of each Major Defense Acquisition Program (MDAP) and other Special Interest acquisition programs as designated by USD (AT&L), assesses the DT&E capabilities of the Military Departments and DoD Components, oversees the DT&E acquisition workforce, issues policy and guidance for the conduct of DT&E within DoD, and produces the annual DT&E report to Congress.

The Department of Operational Energy Plans and Programs (DOEPP) is funded within this program element in FY11 for technical analysis and policy guidance for the DoD operational energy programs and initiatives, including institutionalizing energy in DoD's business processes (e.g., Fully Burdened Cost of Fuel and the Energy Efficiency Key Performance Parameters (KPPs)). In FY12, funding will be re-allocated to a new DOEPP Program Element.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605804D8Z: *Development Test & Evaluation*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	23.512	18.688	17.599	-	17.599
Current President's Budget	33.115	18.688	15.805	-	15.805
Total Adjustments	9.603	-	-1.794	-	-1.794
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	10.500	-			
• SBIR/STTR Transfer	-0.672	-			
• Other Program Adjustments	-0.225	-	-	-	-
• Defense Efficiency - Baseline Review	-	-	-0.158	-	-0.158
• Defense Efficiency-Report, Studies, Boards and Commissions	-	-	-0.442	-	-0.442
• Defense Efficiency – Contractor Staff Support	-	-	-1.169	-	-1.169
• Economic Assumptions	-	-	-0.025	-	-0.025

Change Summary Explanation

The Weapon System Acquisition Reform Act (WSARA) of 2009 directed a new Office of the Director, Systems Engineering and Office of the Director, Developmental Test and Evaluation. In FY 2011, funding in the amount of $21.244M from this Program Element (P805) for previous systems and software engineering efforts, has been transferred to a new Systems Engineering Program Element (0605142D8Z). This transfer accounts for the decrease in funding in the 0605804D8Z Program Element from FY 2010 to FY 2011.

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Defense Efficiency – Contractor Staff Support. As part of the Department of Defense reform agenda, reduces funds below the aggregate level reported in the previous budget submission for contracts that augment staff functions.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605804D8Z: *Development Test & Evaluation*	PROJECT P804: *Development Test & Evaluation*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P804: *Development Test & Evaluation*	28.973	17.195	15.805	-	15.805	16.053	16.666	17.276	17.834	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This (P804) program supports and assesses the DT&E efforts of each Major Defense Acquisition Program (MDAP) and other Special Interest acquisition programs as designated by USD (AT&L), assesses the DT&E capabilities of the Military Departments and DoD Components, oversees the DT&E acquisition workforce, issues policy and guidance for the conduct of DT&E within DoD, and produces the annual DT&E report to Congress. Specific activities include the following:

-- Review and approve the Test and Evaluation Strategy (TES) and Test and Evaluation Master Plans (TEMPs) for each MDAP and USD (AT&L) designated Special Interest program.
-- Provide the Milestone Decision Authority with independent evaluations of acquisition program DT&E planning, execution, and system performance.
-- Coordinate closely with the Director of Systems Engineering to ensure that the developmental test and evaluation activities of the Department of Defense are fully integrated into and consistent with the systems engineering and development planning processes of the Department.
-- Provide Assessments of Operational Test Readiness (AOTRs) to inform the Service Acquisition Executive on readiness of Programs to proceed into Initial Operational Test and Evaluation with a high probability of being found operationally effective, suitable and survivable.
-- Develop policy and guidance to ensure efficient and effective DT&E across DoD, including policy and guidance for joint T&E and, in conjunction with Director, Operational Test and Evaluation (DOT&E), integrated DT&E and OT&E.
-- Provide DT&E assessments for the Systems Engineering Program Support Review process, Nunn-McCurdy certification review teams, and the Director, Performance Assessment and Root Cause Analysis (PARCA).
-- Review the organizations and capabilities of the military departments with respect to developmental test and evaluation and identify needed changes or improvements to such organizations and capabilities, and provide input regarding needed changes or improvements for the test and evaluation strategic plan developed by TRMC.
-- Developing policy, guidance and certification standards to enhance DT&E acquisition workforce planning and progression. Monitoring and facilitating Defense Acquisition University (DAU) updates of T&E courses to ensure the curriculum supports the certification standards and provides the appropriate education and training.

The decrease in funding from FY 2010 to FY 2011 is due to the WSARA of 2009, which directed a new Office of the Director, Systems Engineering, in FY 2011 to receive their a new Systems Engineering Program Element (0605142D8Z).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Developmental Test and Evaluation Accomplishments and Plans	28.973	17.195	15.805
FY 2010 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605804D8Z: *Development Test & Evaluation*	PROJECT P804: *Development Test & Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Completed the first Joint Annual Report to Congress. -Increased staff to match Phase I planning for both Government and Contractor staff to meet Title 10 roles and responsibilities. -Promoted the application of sound systems engineering, developmental test and evaluation, and related technical disciplines across the Department's acquisition community and programs. -Developed and submitted DoD Instruction on Developmental Test and Evaluation. -Provided necessary Test Modeling and Simulation (M&S) policy and guidance; execute Acquisition M&S Master Plan; manage M&S Steering Committee funded projects; and develop M&S policy and guidance recommendations, as required. -Published 3 formal AOTRs (MIDS JTRS, Global Hawk, and Stryker NBCRV), and supported all FY10 Nunn-McCurdy re-certifications. -Conducted reviews and approvals of 33 TEMPs and 3 TESs required to support major acquisition reviews for MDAPs. -Conducted assessments of DT adequacy and program readiness in support of 51 Defense Acquisition Board decisions. -Drafted JME DoD test policy; monitored and facilitated improvements of T&E methods and processes; and monitored and facilitated improvements of T&E infrastructure to support Joint Warfighting Capability concept development. -Integrated safety process advances into the DoD 5000 Series and the Defense Acquisition Guidebook (DAG) to reflect reporting safety risks throughout the systems life cycle; evaluated/introduced safety technologies into new and legacy systems; and streamlined joint safety certification requirements.			
FY 2011 Plans: -Continue hiring/staffing to support WSARA mission. -Refine internal processes to support acquisition decisions. -Refine the annual reporting process and develop the second Joint Annual Report to Congress. -Develop DT&E policies and methodologies addressing Scientific Test and Evaluation Design, Responsible Test Organizations, T&E of Cyber defense, Net-Ready Key Performance Parameter (KPP) and Information Assurance. -Publish formal AOTRs for all Programs under DT&E oversight prior to entry into IOT&E. -Conduct review and approval of all TEMPs and TESs submitted to support major acquisition reviews for MDAPs. -Provide data-based assessments of system performance in support of all scheduled Defense Acquisition Board decisions. -Continue to promote the application of sound systems engineering, DT&E, and related technical disciplines across the Department's acquisition community and programs. -Monitor T&E resource availability and TRMC Strategic Plan implementation.			
FY 2012 Plans: -Reassess Government and Contractor staff manning and resources and ability to meet Title 10 roles and responsibilities. -Refine internal processes to support acquisition decisions. -Refine annual reporting process and develop Joint Annual Report to Congress.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605804D8Z: *Development Test & Evaluation*	PROJECT P804: *Development Test & Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Refine DT&E policies and methodologies addressing DT&E across all MDAP and Special Interest programs. -Publish formal AOTRs for all Programs under DT&E oversight prior to entry into IOT&E. -Conduct review and approval of all TEMPs and TESs submitted to support major acquisition reviews for MDAPs. -Provide data-based assessments of system performance in support of all scheduled Defense Acquisition Board decisions. -Continue to promote the application of sound systems engineering, DT&E, and related technical disciplines across the Department's acquisition community and programs.			
Accomplishments/Planned Programs Subtotals	28.973	17.195	15.805

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605804D8Z: *Development Test & Evaluation*	PROJECT P805: *Software Engineering and System Assurance*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P805: *Software Engineering and System Assurance*	2.602	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Due to the Weapons Systems Reform Acquisition Act of 2009, which directed a new Office of the Director, Systems Engineering, in FY 2011, funding from this project (P805) for previous Director, Systems and Software Engineering efforts, have been transferred to a new Systems Engineering Program Element (0605142D8Z).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Software Engineering and System Assurance Initiatives	2.602	-	-

FY 2010 Accomplishments:

Supported Acquisition Success:
- Provided software and system assurance expertise for ACAT ID/IAM and special interest programs.

Improved State-of-the-Practice of Software Engineering:
- Developed strategies to address software systemic issues
- Established System Assurance policy for DoD acquisition programs.
- Performed v2.0 update to the Capability Maturity Model Integration (CMMI).
- Developed System of System (SoS) Engineering guidance to support specific customers (ie. Program Office Staffs), and specific issues (ie. T&E, M&S) based on pilot applications.

Provided Software Leadership and Outreach:
- Participated in Service-led software initiatives, e.g., Army Strategic Software Improvement Program and multi-national forums, e.g., Software Intensive Systems Acquisition Improvement Group.
- Continued implementation of Department/National strategic plan for meeting defense software requirements.
- Lead the SoS Community in research and application via the National Defense Industrial Association (NDIA) System of Systems SE Committee.

Ensured Adequate Software Resources to Meet DoD Needs:
- Expanded DoD Acquisition curriculum efforts beyond the Program Manager career field into systems engineering.
- Published the Graduate Software Engineering Reference Curriculum
- Developed education and training modules for program protection and SoS SE.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605804D8Z: *Development Test & Evaluation*	PROJECT P805: *Software Engineering and System Assurance*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Objectives: Tools and techniques updated; program support provided to ACAT ID/IAM and special interest programs; expanded set of partners and updated agenda. Artifacts: SoS Engineering Guide, CMMI v2.0, DoD Software Strategic Plan; conference sponsorship and participation (e.g., Systems and Software Technology Conference, Systems Engineering); and updated DAU curriculum with software considerations. ***FY 2011 Plans:*** Efforts transferred to a new Systems Engineering Program Element (0605142D8Z) in FY 2011.			
Accomplishments/Planned Programs Subtotals	2.602	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605804D8Z: *Development Test & Evaluation*	PROJECT P806: *Energy*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P806: *Energy*	1.540	1.493	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program develops model revisions and enabling analyses to implement legislative requirements for analyzing, implementing and overseeing the implementation of the Fully Burdened Cost of Fuel (FBCF), the Energy Efficiency Key Performance Parameter and related acquisition planning factors directed in the 2009 National Defense Authorization Act (NDAA)(10 USC 2925). That statute mandated use of the FBCF in systems development, platform design and assessments of total ownership cost of systems. This effort focuses on building; analytical and modeling tools and methods to create more accurate Fully Burdened Cost of Fuel estimates for acquisition programs; applicable Energy Key Performance Parameter (KPP) metrics for program managers and oversight authorities; modifications to existing and potentially new alternative tactical, operational and strategic-level models that capture operational energy risk for Military Department, Joint Staff and Office of the Secretary of Defense planners, policy-makers and oversight authorities.

Work conducted under this line will focus on research and development prioritization analysis related to identified operational energy capability gaps; campaign-level model modifications to allow simulated US logistics forces to interact independently in analysis and planning; energy tool development for military requirements analysts related to operational energy gaps, etc.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Energy Initiatives	1.540	1.493	-
FY 2010 Accomplishments: Fielded a draft Fully Burdened Cost of Fuel (FBCF) analytical methodology and calculator supporting methodological guidance (instructions, manuals and handbooks) and metrics for integration and application of the FBCF into DoD acquisition system. These documents and models are currently hosted on the Defense Acquisition University website for community use and refinement. Supported post-QDR implementation work on operational energy concerns in Service Title 10 wargames and related analyses. Collaborated with Military Department Energy Offices and acquisition organizations to refine and implement FBCF analyses within targeted acquisition programs. Resourced and guided two joint studies with the Joint Staff J4 and the Navy Energy Coordination Office demonstrating and refining the Energy KPP and the FBCF within relevant case studies and explained how to apply the methods to emerging acquisition programs.			
FY 2011 Plans: Provide direct analytic support and model development support to the Director for Operational Energy Plans & Programs. Work conducted under this line may include research and development prioritization analysis related to identified operational energy capability gaps; campaign-level model modifications to allow simulated US logistics forces to interact independently in analysis and planning; energy tool development for military requirements analysts related to operational energy gaps, identification			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605804D8Z: *Development Test & Evaluation*	PROJECT P806: *Energy*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
and collection of operational energy data to support development of metrics and establish an operational energy baseline for the Department, among other areas. All work under this line will also provide a basis for broader analyses within the Analytic Agenda, in which these organizations will help interject more realistic fuel logistics risk assessment, alternative force structure assessments, etc. ***FY 2012 Plans:*** Efforts will be transferred to a new Operational Energy Plans & Programs Program Element in FY 2012.			
Accomplishments/Planned Programs Subtotals	1.540	1.493	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0606100D8Z: *Budget and Program Assessments*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	5.705	6.099	4.528	-	4.528	4.438	4.493	4.564	4.539	Continuing	Continuing
101: *Budget and Program Assessments*	5.705	6.099	4.528	-	4.528	4.438	4.493	4.564	4.539	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program supports both the Office of the Director, Cost Assessement & Program Evaluation (CAPE), formerly known as Program, Analysis & Evaluation (PA&E). It funds assessments that help to resolve budget and programmatic issues across the full range of the Department's activities. Projects that support this effort help to inform the leadership on program alternatives, capability concept development, design and cost, the appropriate balance of capabilities across the force, and also to identify how well the Department's expenditures are meeting its goals, and how well the force can implement the defense strategy.

This program provides for analytical research across a spectrum of issues and concerns. The research agenda is focused on near to long-term problems identified by the Secretary of Defense, and addresses difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance the senior leadership's deliberations and decision-making.

This program will provide the scientific and technical engineering services needed for research studies in the development of models and simulations and the evaluation of current analytical tools and scientific methods used to evaluate and assess weapons systems and warfighting capabilities for warfighting environments and scenarios the Department is learning to analyze (irregular warfare, GWOT, and homeland defense). Deliverables from this program will include reports, briefings, and analyses designed to illuminate critical issues facing the Department. This will include recommendations for new modeling techniques, programmatic alternatives, and scenario development.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0606100D8Z: *Budget and Program Assessments*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	5.929	6.099	6.272	-	6.272
Current President's Budget	5.705	6.099	4.528	-	4.528
Total Adjustments	-0.224	-	-1.744	-	-1.744
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Reduction for Reserve Account	-0.048	-	-	-	-
• Reducing Reliance on DoD Service Support Contractors	-	-	-0.486	-	-0.486
• OSD Studies Reduction	-	-	-1.146	-	-1.146
• Economic Assumptions	-	-	-0.006	-	-0.006
• Other DoD Efficiency Reductions	-	-	-0.106	-	-0.106
• Other Program Adjustments	-0.176	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0606100D8Z: *Budget and Program Assessments*	PROJECT 101: *Budget and Program Assessments*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
101: *Budget and Program Assessments*	5.705	6.099	4.528	-	4.528	4.438	4.493	4.564	4.539	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program supports both the Office of the Director, Cost Assessement & Program Evaluation (CAPE), formerly known as Program, Analysis & Evaluation (PA&E), and the Office of the Under Secretary of Defense (Comptroller). It funds assessments that help to resolve budget and programmatic issues across the full range of the Department's activities. Projects that support this effort help to inform the leadership on program alternatives, capability concept development, design and cost, the appropriate balance of capabilities across the force, and also to identify how well the Department's expenditures are meeting its goals, and how well the force can implement the defense strategy.

This program provides for analytical research across a spectrum of issues and concerns. The research agenda is focused on near to long-term problems identified by the Secretary of Defense, and addresses difficult and complex questions linked to program alternatives for current and future capabilities and forces in order to enhance the senior leadership's deliberations and decision-making.

This program will provide the scientific and technical engineering services needed for research studies in the development of models and simulations and the evaluation of current analytical tools and scientific methods used to evaluate and assess weapons systems and warfighting capabilities for warfighting environments and scenarios the Department is learning to analyze (irregular warfare, GWOT, and homeland defense). Deliverables from this program will include reports, briefings, and analyses designed to illuminate critical issues facing the Department. This will include recommendations for new modeling techniques, programmatic alternatives, and scenario development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: OSD Support for Programming Budget, 0606100D8Z	5.705	6.099	4.528
FY 2010 Accomplishments: • Force and Infrastructure Studies • Communications mix of COMSATCOM, MILSATCOM, fixed ground, tactical ground, airborne and maritime capabilities, network management, FCS network and spin-out technologies, and ISR network capabilities • Airborne ISR Force Structure Sizing for Irregular Warfare, Homeland Defense, and Conventional Campaigns • Success factors for Expeditionary Counterinsurgency Operations • Assessment of networked intelligence, surveillance, and reconnaissance (ISR) efforts • Evaluate defensive undersea war fighting capabilities of a high value unit in 2016 and 2024 • Pacific Shaping Studies (sea lines of communication, naval and air warfare analysis			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0606100D8Z: *Budget and Program Assessments*	PROJECT 101: *Budget and Program Assessments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• The Appropriate Balance Between Conventional and Irregular Warfare Capabilities • Way Ahead in Iraq and Afghanistan • Nuclear Posture Review and the Future of the Nuclear Triad • Missile Defense and the Balance Between Rouge and Regional Threats • Mistmatch Between Cost of Current Forces and Projected Budgets • Role of Guard/Reserve and How Access Policies and Capability Mix Influence Force Sufficiency • Ground Force Structure Analysis and the Kinetic Battlefield to Include Analysis of Future Threats and Equipping Strategies • The Total Cost of TACAIR and Mix of Capabilities, Air-to-Air, Air Superiority, and Electronic Warfare • Readiness for the Rotating Army, Readiness in Dwell and Reachback Capabilities • C4ISR Capabilities • Strategic versus Tactical ISR • Space Strategy and Capabilities • Cyberspace Strategy and Security • Tradeoffs between C4ISR Capabilities in Space versus “Air-breathers” • Communications Architecture (TSAT, WIN-T, JTRS, Airborne Tier) • Long Wave IR • Homeland Defense and Consequence Management			
FY 2011 Plans: • Continue to expand mission and regional breadth of ISR-support studies, still using data intensive approach that quantitatively links ISR inputs to operational outcomes. • Improve the accuracy of combat adjudication models and other simulation tools for studying the full range of combat operations from irregular warfare to large, full scale force-on-force combat. The effort will explore and develop techniques to explicitly account for dependencies and the constraints imposed by spatial and temporal (space and time) separations distinguishing combatants. • Assess capacity needed within DoD, as well as the role of agencies and allies in a range of scenarios against Force Planning Construct of homeland defense, irregular warfare/war on terror, and conventional conflict across steady state and surge environments. • Determine the contribution of DoD forces as part of a local, state, and federal interagency response to current and future homeland defense consequence management scenarios. • Continue assessments for technologies and strategies for space and cyberspace security.			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0606100D8Z: *Budget and Program Assessments*	PROJECT 101: *Budget and Program Assessments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Continue to expand mission and regional breadth of ISR-support studies, still using data intensive approach that quantitatively links ISR inputs to operational outcomes. • Improve the accuracy of combat adjudication models and other simulation tools for studying the full range of combat operations from irregular warfare to large, full scale force-on-force combat. The effort will explore and develop techniques to explicitly account for dependencies and the constraints imposed by spatial and temporal (space and time) separations distinguishing combatants. • Assess capacity needed within DoD, as well as the role of agencies and allies in a range of scenarios against Force Planning Construct of homeland defense, irregular warfare/war on terror, and conventional conflict across steady state and surge environments. • Determine the contribution of DoD forces as part of a local, state, and federal interagency response to current and future homeland defense consequence management scenarios. • Continue assessments for technologies and strategies for space and cyberspace security.			
Accomplishments/Planned Programs Subtotals	5.705	6.099	4.528

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

A mix of competitive contracts with commercial firms and research provided by colleges, universities, and FFRDCs.

E. Performance Metrics

The products or expected outcomes of this program are studies and analyses to support resource allocation decisions, major defense acquisition decisions, and issues of high interest to the Secretary of Defense. Performance is measured by the quality of the analyses and is monitored through the review of our organizational assessment process. Our primary goal is to ensure that study and analytical products are timely, clear, complete, accurate, responsive, balanced, and objective.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0606301D8Z: *Aviation Safety Technologies*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	7.699	10.900	6.925	-	6.925	-	-	-	-	Continuing	Continuing
901: *Aviation Safety Technologies*	7.699	10.900	6.925	-	6.925	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

Note

A. Mission Description and Budget Item Justification

This funding supports Secretary Gates direction to achieve a 75% reduction in accidents and supports the Defense Safety Oversight Council's (DSOC) pursuit of aviation safety technologies. The Guidance for the Development of the Force (GDF) directs DoD Components to pursue accident reduction and prevention initiatives that emphasize safety in the workplace and hold leaders accountable for their safety programs. In FY 2008, there were 89 Class A aviation accidents with 61 destroyed aircraft and 32 fatalities. The aviation accidents cost the Department over $2.9 billion with indirect costs approximately four times that amount.

The DSOC used a data-driven approach to identify and evaluate the most effective hardware and software technologies to be implemented to reduce preventable aviation mishaps. The DSOC task force surveyed existing programs and provided an assessment of the viability and advisability of future resource investments. These investments will fund hardware and software technology to prevent helicopters and fighter aircraft mishaps.

Collision avoidance was recommended for funding in FY 2010. Automatic Collision Avoidance Technologies (ACAT) has been developed by the Air Force to prevent the most prevalent causes of fighter/attack mishap fatalities and destroyed aircraft. An Automatic Ground Collision Avoidance (Auto-GCAS) component of ACAT has matured and is ready for fleet integration. FY 2010-FY2012 money will leverage the successes of ACAT by furthering the development of Auto-ACAS, while retaining scarce technical expertise and flight test resources currently in use. As an unintended side benefit, Auto-ACAS may also hold a key to Unoccupied Aerial Vehicle access to the National Airspace.

The Secretary stated that we can not and should not tolerate the injuries, costs, and capability losses from preventable accidents.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0606301D8Z: *Aviation Safety Technologies*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	8.000	10.900	7.100	-	7.100
Current President's Budget	7.699	10.900	6.925	-	6.925
Total Adjustments	-0.301	-	-0.175	-	-0.175
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.301	-			
• Defense Efficiency -Service Support Contract	-	-	-0.046	-	-0.046
• Other Efficiencies	-	-	-0.129	-	-0.129

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: 901 Aviation Safety Technologies	7.699	10.900	6.925
FY 2010 Accomplishments: FY 2010 Plans: • Further develop the Auto-Air Colllision Avoidance System (Auto-ACAS), to address the number one cause of fighter Class A mishaps. • Complete a data link study to determine most compatible data link for Auto-ACAS and future operational functionallity. • Begin Auto-ACAS algorithm development.			
FY 2011 Plans: • Further develop the Auto-Air Collision Avoidance System (Auto-ACAS), to address the number one cause of fighter Class A mishaps. • Complete a data link study to determine most compatible data link for Auto-ACAS and future operational functionality. • Begin Auto-ACAS algorithm development.			
FY 2012 Plans: • Complete algorithm development and begin simulations. • Complete simulations and ground testing and advance to F-16 flight test.			
Accomplishments/Planned Programs Subtotals	7.699	10.900	6.925

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0606301D8Z: *Aviation Safety Technologies*

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

• Class A aviation accident rates. Number of Class A aviation accidents, (resulting in damages of $2m or more; aircraft destroyed; and/or fatality or permanent disability), per 100,000 flying hours.
• Number of destroyed aircraft.
• Number of aviation fatalities.
• 75% reduction goal assessed against a FY 2002 baseline.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0203345D8Z: *Operations Security (OPSEC)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	-	-	1.777	-	1.777	2.925	5.620	7.417	9.403	Continuing	Continuing
0000: *OPSEC*	-	-	1.777	-	1.777	2.925	5.620	7.417	9.403	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Joint Operations Security Initiative (JOSI) enhancement consists of six components:

1. OPSEC Force Evaluation - will focus on billets, personnel identifications and tracking, allocation, and operational employment.
2. OPSEC Training and Education - will focus on exercise support and formal education curricula review and development.
3. OPSEC Intelligence Support - will establish governance processes and procedures for OPSEC intelligence integration that will focus on the integration of special intelligence requirements; intelligence and threat repository support; Open Source Intelligence, Human Intelligence, and Signals Intelligence support; and intelligence support to Military Deception in support of OPSEC.
4. OPSEC Technology and Tools Research, Testing, and Development - will identify emerging technologies and tools consisting of physical menas, technical means, and administrative means.
5. OPSEC Measures and Countermeasures Assessments - will focus on friendly and adversary assessments. Assessment criteria will be based on observable actions, indicators, or information that will provide the bases for identifying control measures such as: Action Controls, Countermeasures, and Counter Analysis.
6. OPSEC Governance - will consist of the development and oversight of infrastructure, policy, authorities, and warfighter advocacy across the Joint community and the Defense support agencies.

B. Program Change Summary ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	1.777	-	1.777
Total Adjustments	-	-	1.777	-	1.777
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• New Start Program	-	-	1.780	-	1.780
• Economic Assumptions	-	-	-0.003	-	-0.003

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0203345D8Z: *Operations Security (OPSEC)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Operations Security Initiative (JOSI) ***FY 2010 Accomplishments:*** Not Applicable ***FY 2011 Plans:*** Not Applicable ***FY 2012 Plans:*** - Begin plans and studies addressing JOSI's six components (i.e. Force Evaluation, Training and Education, Intelligence Support, Technology Tools Research, Measures/Countermeasures Assessments, and Governance) - Implement plans and recommendations	-	-	1.777
Accomplishments/Planned Programs Subtotals	-	-	1.777

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

(U) Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity as defined below:

- Time - Will the effort enable the warfighter to speed up processes faster than current capabilities allow?
- Money - Will the effort enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow?
- Realism - Will the effort enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow?
- Fidelity - Will the effort ensure unity of efforts throughout the IO, Cyber, and IOI Communities?

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0303166D8Z: *Support to Information Operations Capability*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	29.488	31.500	12.209	-	12.209	11.630	11.155	10.869	9.254	Continuing	Continuing
001: *IO Capability Activities*	6.982	4.861	3.433	-	3.433	3.126	3.199	3.268	3.638	Continuing	Continuing
002: *IO Range*	9.254	11.669	4.202	-	4.202	4.300	4.357	4.514	3.736	Continuing	Continuing
003: *VisIOn*	8.532	14.970	4.574	-	4.574	4.204	3.599	3.087	1.880	Continuing	Continuing
004: *Enhanced Simulation for Information Operations Capabilities*	4.720	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

These programs are part of the Defense Department's coordinated effort to integrate Information Operations (IO), Cyber, and Intelligence Operations Integrations (IOI) test and evaluation capabilities to assess IO, Cyber, and IOI technologies and tactics in a representative operational environment against realistic targets. The Defensewide IO Program Review revalidated the need for a suite of automated data analysis and decision support software tools to facilitate joint-IO. The advent of critical Cyberspace Operations mandate Cyber Technologies be assessed in a like environment. In addition, joint warfighter requirements are driving the need for the integration of intelligence and operations capabilities/capacities. These efforts enable users to accomplish Joint Intelligence Preparation of the Operational Environment (JIPOE), develop effective IO, Cyber, and operational strategies and candidate campaign targets, plan missions, and monitor and assess execution of operations. The objectives of the programs are to create a flexible, seamless and persistent environment enabling Combatant Commanders to achieve the same level of confidence and expertise in employing IO and Cyber capabilities that they have in kinetic weapons; to lead the development of joint IOI capabilities and capacity that facilitate operational and intelligence planning activities by the Services and COCOMs; and to transform IO, Cyber, and IOI activities to support joint IO training, education, and exercises.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0303166D8Z: *Support to Information Operations Capability*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	30.376	31.500	30.491	-	30.491
Current President's Budget	29.488	31.500	12.209	-	12.209
Total Adjustments	-0.888	-	-18.282	-	-18.282
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.849	-			
• Operational Efficiency - Discontinued participation in Department of Energy effort to provide research and development spt and service to establish analysis of energy related critical infrastructure	-	-	-1.000	-	-1.000
• IO PSA mission transfer to USD(Policy)	-	-	-0.265	-	-0.265
• Service Support Contractor adjustment	-	-	-0.185	-	-0.185
• Department Adjustment	-0.039	-	-0.039	-	-0.039
• JFCOM Efficiencies - Baseline Review. As part of the DOD reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities.	-	-	-16.793	-	-16.793

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303166D8Z: *Support to Information Operations Capability*	PROJECT 001: *IO Capability Activities*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
001: *IO Capability Activities*	6.982	4.861	3.433	-	3.433	3.126	3.199	3.268	3.638	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Details provided in the Defense-wide classified book.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: IO Capability Activities	6.982	4.861	3.433
Description: Funds the development of IO, Cyber and IOI capabilities and capacity to support COCOMs and Services executing operations during current and future conflicts. Supports the development of IO, Cyber and IOI capabilities, particularly critical emerging IO abd Cyber needs that support IO/Cyber planners and operators. ***FY 2010 Accomplishments:*** Details provided in the Defense-wide classified book. ***FY 2011 Plans:*** Details provided in the Defense-wide classified book. ***FY 2012 Plans:*** Continue to develop IO, Cyber and IOI capabilities that support COCOMs and Services executing operations during current and future conflicts. Support the development of IO, Cyber and IOI capabilities, particularly critical emerging IO abd Cyber needs that support IO/Cyber planners and operators.			
Accomplishments/Planned Programs Subtotals	6.982	4.861	3.433

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Details provided in the Defense-wide classified book.

E. Performance Metrics

Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity as defined below:

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303166D8Z: *Support to Information Operations Capability*	PROJECT 001: *IO Capability Activities*

• Time – Will the effort enable the warfighter to speed up processes faster than current capabilities allow?
• Money – Will the effort enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow?
• Fidelity – Will the effort ensure unity of efforts throughout the IO, Cyber, and IOI Communities?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303166D8Z: *Support to Information Operations Capability*	PROJECT 002: *IO Range*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
002: *IO Range*	9.254	11.669	4.202	-	4.202	4.300	4.357	4.514	3.736	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The National Military Strategy of the United States stresses the importance of integrating Information Operations (IO) capabilities for the success of Joint Operations and Decision Superiority. The Defense-Wide IO Program Review revalidated a requirement for an integrated range supporting “exercises, testing, and development of IO capabilities.” Further direction by the Office of the Secretary of Defense (OSD) identified the need for an “integrated IO test and evaluation capability to assess IO technologies and tactics in a representative operational environment against realistic targets.” The 2006 National Security Strategy identifies "Strengthen Alliances to Defeat Global Terrorism and Work to Prevent Attacks Against Us and Our Friends", which involves significant Information Operations (IO) and Cyber operations as a goal. Through the Defense Planning Guidance (DPG) and the Integrated Priority Lists, COCOMs repeatedly state the need to expand IO/Cyber training and education for the developing cadre of IO/Cyber professionals and provide an environment for analysis, testing, training, combat assessments, and measures of effectiveness for more reliable IO/Cyber capabilities. Deputy Secretary of Defense Memorandum on the IO Range established the requirement for creating a cooperative IO range among the Military Services.

The IO Range provides a secure, flexible, and seamless environment for the Military Services and Joint warfighters to test, train, develop tactics, and exercise selected IO/Cyber capabilities. The basis of the functional structure of the IO Range is the integration of existing ranges, laboratories, information warfare centers, and other Government facilities that currently support IO/Cyber test, training, exercise, and experimentation events. Capabilities at the selected sites are securely connected and integrated into the IO Range. A key feature of this concept is a persistent, secure connection that links the sites together, allowing the exchange of data and the visualization of effects as we employ capabilities. Creation of a “virtual range” based on persistent connections significantly reduces the amount of lead-time required to set up each new warfighter event. The long-term goal for the IO Range is to be a full spectrum IO/Cyber Range supporting: operations security (OPSEC), computer network operations (CNO), electronic warfare (EW), military information support operations (MISO), and military deception (MILDEC). This environment enables the warfighters to visualize non-kinetic weapons effects, understand the intricate and interactive effects generated by kinetic and non-kinetic weapons and achieve the same level of confidence and expertise in employing IO/Cyber capabilities as they have with kinetic capabilities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: IO Range	9.254	11.669	4.202
FY 2010 Accomplishments: • Developed, tested and evaluated IO Range concepts during events based on a list of prioritized requirements and available funding. • Continued to evolve full spectrum IO towards full range of capabilities to include Computer Network Operations, Electronic Warfare (EW), Deception, and other related targets.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303166D8Z: *Support to Information Operations Capability*	PROJECT 002: *IO Range*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Continued the implementation of IO capabilities at the Range sites. This continuing effort supports progress toward reaching full capability in which more than 70 persistent IO Range sites will be connected and integrated for IO Range use. ***FY 2011 Plans:*** • Develop, test and evaluate IO Range concepts during events based on a list of prioritized requirements and available funding. • Continue to evolve full spectrum IO/Cyber towards full range of capabilities to include Computer Network Operations, EW, Deception, and other related targets. • Continue the implementation of IO/Cyber capabilities at the Range sites. This continuing effort supports progress toward reaching full capability in which more than 90 persistent IO Range sites will be connected and integrated for IO Range use. ***FY 2012 Plans:*** • Develop, test and evaluate IO Range concepts during events based on a list of prioritized requirements and available funding. • Development toward full spectrum IO/Cyber will continue to evolve with the addition of a more robust set of Electronic Attack targets. • Continue the implementation of IO/Cyber capabilities at the Range sites. This continuing effort supports progress toward reaching full capability in which more than 90 persistent IO Range sites will be connected and integrated for IO Range use.			
Accomplishments/Planned Programs Subtotals	9.254	11.669	4.202

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Details provided in the Defense-wide classified book.

E. Performance Metrics

Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity as defined below:

• Time – Will the effort enable the warfighter to speed up processes faster than current capabilities allow?
• Money – Will the effort enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow?
• Fidelity – Will the effort ensure unity of efforts throughout the IO/Cyber Community?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303166D8Z: *Support to Information Operations Capability*	PROJECT 003: *VisIOn*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
003: *VisIOn*	8.532	14.970	4.574	-	4.574	4.204	3.599	3.087	1.880	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Virtual Support for the Information Operations Environment (VisIOn) is the DoD primary Joint IO/Cyber decision support system for analysis, planning, and assessment of IO and Cyber operations. VisIOn will be accessible to the Joint Force Commander (JFC), Combatant Commanders (CCDRs), and their components for integration of intelligence, operational processes, and databases in support of IO/Cyber planning to include courses of action development, analysis, and assessment. As such, it is being designed to improve data discovery, integrative analysis, requests for information tracking, and integration of multi-discipline data. VisIOn will integrate and couple decision support capabilities with analytic capabilities to develop products such as Joint Intelligence Preparation of the Operational Environment, centers of gravity analysis, information environment characterizations, adversary tactics/techniques, and diagnostic/predictive assessment products. VisIOn will support planning, execution, and assessment of IO and Cyber operations, to include Military Information Support to Operations (MISO), Electronic Warfare (EW), Operations Security (OPSEC), Computer Network Operations (CNO), and Military Deception (MILDEC); and integration of other critical capabilities (Physical Destruction, Physical Security, Counter-Intelligence, Information Assurance, and Combat Camera) and related activities (Public Affairs, Civil Affairs, and Defense Support to Public Diplomacy capabilities).

VisIOn will support and enhance the IO/Cyber operations mission by creating a collaborative environment to connect people, processes, and technology that will merge and automate IO/Cyber/IOI analysis, planning, and assessment functions to meet operational needs. VisIOn will bring together communities of interest and facilitate the resolution of specific IO/Cyber/IOI problem sets. VisIOn will leverage existing analysis and data sets to the fullest extent by integrating with existing planning services, via a Service-Oriented Architecture.

VisIOn will be a web-based system for integrating joint IO analysis, planning and assessment in the Joint Net-centric Operations (JNO) environment. It will include a suite of scalable, modular, data and software services that are to the maximum extent practical, platform independent.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: VIsIOn	8.532	14.970	4.574
FY 2010 Accomplishments: • Continued development toward Initial Operational Capability (IOC) in FY 2011 • Continued program development in preparation for Operational Test and Evaluation • Efforts underway to establish Milestone Decision Authority and declare VisIOn as ACAT III level program			
FY 2011 Plans: • Achieve successful Operational Test and Evaluation • Establish Milestone Decision Authority and declare VisIOn as ACAT III level program			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303166D8Z: *Support to Information Operations Capability*	PROJECT 003: *VisIOn*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Achieve IOC and continue spiral development, integrating new tools and other IO capabilities towards Full Operational Capability (FOC) ***FY 2012 Plans:*** • Continue spiral development, integrating new tools and other IO capabilities towards FOC • Continue fielding to COCOMs/Services/Agencies.			
Accomplishments/Planned Programs Subtotals	8.532	14.970	4.574

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The VisIOn acquisition, management, and contracting strategy consists of the application of management tools and quarterly reviews by the System Development Integrated Process Team (SDIPT) made up of customers and functional oversight managers. Effort ensures adherence to guidance outlined in the DoD 5000 series directives, Directive 7, Federal Acquisition Regulations, and FAR Supplement Policies and Procedures required to acquire and sustain capabilities, systems, tools, products, and services through a disciplined, yet agile, process that enables the defense establishment to provide and protect vital information and support IO for the nation and the warfighters.

E. Performance Metrics

Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity as defined below:

• Time – Will the effort enable the warfighter to speed up processes faster than current capabilities allow?
• Money – Will the effort enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow?
• Fidelity – Will the effort ensure unity of efforts throughout the IO, Cyber, and IOI Communities?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303166D8Z: *Support to Information Operations Capability*	PROJECT 004: *Enhanced Simulation for Information Operations Capabilities*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
004: *Enhanced Simulation for Information Operations Capabilities*	4.720	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Enhanced Simulation for IO, Cyber, and IOI Capabilities provides a software architecture that can bring network management to the Deputy Secretary of Defense Chartered Information Operations Range and VisIOn initiatives. The IO Range and VisIOn programs require the transfer of large amounts of data to accomplish their mission and must mitigate or overcome latency and bandwidth limitation inherent in all networks. These network limitations are especially prevalent in field operations where connectivity to networks is erratic. The DoD leadership recognizes the need to improve efficiency in utilizing non- kinetic weapons. Currently, however, the ability to create and operate the realistic operational environment required to support effective integration of these systems is limited because data transfer requirements exceed real world bandwidth limitations. The software architecture supports IO Range and VisIOn objectives to provide analysis, planning, rehearsal, and execution environments for US and coalition forces by enabling large-scale data transfer, and providing a central integration point with new standards, and enhancing simulation capabilities. This saves considerable time and money by eliminating rewrites of existing simulations and filtering of critical data thus providing a mission critical solution.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Enhanced Simulation for IO, Cyber, and IOI Capabilities	4.720	-	-
Description: The IO Range and VisIOn programs require the transfer of large amounts of data to accomplish their mission and must mitigate or overcome latency and bandwidth limitation inherent in all networks. These network limitations are especially prevalent in field operations where connectivity to networks is erratic. IO Range and VisIOn objectives provide planners the ability to analyze, plan, rehearse, and execute environments for US and coalition forces by enabling large-scale data transfer, and providing a central integration point with new standards, and enhancing simulation capabilities. ***FY 2010 Accomplishments:*** Continued integration of data bases and toolsets for planners. ***FY 2011 Plans:*** N/A ***FY 2012 Plans:*** N/A			
Accomplishments/Planned Programs Subtotals	4.720	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303166D8Z: *Support to Information Operations Capability*	PROJECT 004: *Enhanced Simulation for Information Operations Capabilities*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Through the Modeling and Simulation Board, identify and fund intelligence and information operations related projects that increase the effectiveness and clarity of intelligence products to the operational planner and provide commanders actionable recommendations

E. Performance Metrics

Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity as defined below:

- Time – Will the effort enable the warfighter to speed up processes faster than current capabilities allow?
- Money – Will the effort enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow?
- Realism – Will the effort enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow?
- Fidelity – Will the effort ensure unity of efforts throughout the IO, Cyber, and IOI Communities?

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0303169D8Z: *IT Rapid Acquisition*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	4.507	5.135	4.288	-	4.288	4.270	4.362	4.412	4.446	Continuing	Continuing
169: *IT Rapid Acquisition*	4.507	5.135	4.288	-	4.288	4.270	4.362	4.412	4.446	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Department must rapidly transform its processes in order to better support the agile warfighter. This PE is dedicated to Rapid Acquisition Incentives – Net Centricity (RAI-NC) which serve DoD by providing RDT&E proof-of-concept early implementation of key initiatives targeted at advancing and moving the Mission Areas of DoD towards Net Centricity. For example, a coherent and timely transition across DoD Enterprise networks and infrastructure to the next generation of the Internet Protocol, IP version 6 (IPv6) is critical to leveraging the power of information by the business and warfighting mission areas through net-centric operations/warfare. The PE permits accelerating domain support processes thru rapid proof of concept development and early implementation.

RAI-NC provides funding for Net Centric initiatives that directly support and facilitate the transformation of the DoD enterprise. This effort is consistent with the Department's strategic goals to: enable net-centric operations and warfare, reduce costs; improve efficiency; increase effectiveness by improving the efficiency and effectiveness of process redesign; business systems modernization; strategic sourcing; infrastructure reductions; and optimal-sized inventories. The objective of RAI-NC is to accelerate DoD's net centric transformation in support of the warfighter. Fully achieving net-centricity requires the ubiquity, mobility, security and performance achievable through implementation of the value added features of IPv6. The scope of Rapid Acquisition Incentives – Net Centricity encompasses defense policies, processes, people, technologies and systems that guide, perform or support aspects of warfighter support processes within the Department. Each RAI-NC initiative provides proof of concept sustainability, as well as the scalability necessary for Domain enterprise wide implementation that will allow end-to end accessibility to net-centric based decision-making information. Successful implementation will result in more reliable, accurate and timely net centric management information upon which managers can make more effective business decisions in a timely manner for the Department.

RAI-NC enables the acceleration of DoD efforts to implement network centric operational environments while providing a secure, flexible, reliable, affordable, integrated network to achieve high effectiveness in joint and combined operations. This program employs RDT&E funds to plan, develop, prototype and oversee proof of concept initiatives. Successful initiatives with supporting business cases demonstrating the achieved goals and outcomes and mission area support will be allowed to enter full deployment. This program is funded under BA-6, Management Support because it includes studies and analyses in support of R&D efforts.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0303169D8Z: *IT Rapid Acquisition*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	4.630	5.135	5.239	-	5.239
Current President's Budget	4.507	5.135	4.288	-	4.288
Total Adjustments	-0.123	-	-0.951	-	-0.951
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.123	-	-	-	-
• OSD Studies Contracts Efficiency	-	-	-0.414	-	-0.414
• DoD Service Support Contracts Efficiency	-	-	-0.272	-	-0.272
• Economic Assumptions	-	-	-0.006	-	-0.006
• NII Contractor Efficiency	-	-	-0.259	-	-0.259

Change Summary Explanation

FY 2010: Program adjustment -0.123 million.
FY 2011: No change.
FY 2012: Economic Assumptions -0.006 million, OSD Study contracts efficiency 0.414 million, NII Contractor Efficiency reduction -0.259 million, DoD Service Support Contracts efficiency -0.272 million.

Studies contracts efficiencies will be realized by reducing the number of studies that we participate in while still supporting enterprise-wide information technology goals critical to DoD Mission.
Service Support Contract efficiencies will be realized by reducing the reliance on DoD Service Support Contractors by utilizing in-house government support in a constrained personnel and resource environment.
NII reduction to contractor staff efficiencies will be realized by continuing to provide policy, guidance, program oversight, and resource management for command and control (C2), communications, spectrum, information assurance, and Information Technology programs with significantly less contractor support.
Economic Assumptions will be realized by reducing our reliance on contractors while still achieving OASD(NII)/DoD CIO goals and objectives while in a constrained personnel and resource environment.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: IT Rapid Acquisition Plans and Accomplishments	4.507	5.135	4.288

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303169D8Z: *IT Rapid Acquisition*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: • Monitored/evaluated implementation efforts of IPv6. • Ensured IPv6 transition efforts are synchronized across all DoD Components by conducting program reviews and review of implementation plans. • Incorporated into policy guidance, new direction and OMB goals regarding the management and implementation of IPv6. • Held compliance sessions to address common and unique issues requiring the DoD CIO's intervention to revise policy, provide additional guidance or to surface technological concerns with vendors or OMB, that are hampering execution. • Updated transition plan and policy to accommodate new guidance and technologies. • Continued to work with DISA in providing governance and oversight of the Department's implementation of IPv6, including the review of products, identifying critical issues and making recommendations for solutions. • Continued to provide oversight and guidance to DISA in developing and refining the NIPRNET/SIPRNET infrastructure to achieve full IPv6 capability. • Oversaw implementation of UCR 2008 document • Published and oversaw implementation of UCR 2010 document • Published and oversaw implementation of Universal Capabilities (UC) DoDI • Facilitated DoD UC Industry Advisory Council (IAC) Conferences • Developed DoD UC IAC Charter • Established DoD UC Steering Group (UCSG), and develop a UCSG Charter • Continued industry and government outreach efforts to facilitate development and implementation of UC policy • Incorporated a UC distributed test concept, to revise the UC test and certification process, into the draft UC DoDI • Oversaw development of IPv6 Milestone Objective 3 (MO3) Information Assurance (IA) guidance • Oversaw completion of the DoD IPv6 Joint Staff Operational Criteria T&E • Collaborated with OMB and follow OMB IPv6 Planning Guide/Roadmap document to guide United States Government (USG) IPv6 implementation • Provided DoD IPv6 implementation status updates to OMB for the FY09 Enterprise Architecture Assessment • Continued ongoing interoperability and supportability process improvement to create an environment for an emerging DoD NC interoperability strategy, policy, process, tools/data, and metrics into improved environment for all tiers of interoperability accountability in the DoD • Unified Capabilities (UC) DoD Insrtuction – drafted, coordinated, finalized, and issued DoDI 8100.ee, DoD Unified Capabilities • DoD IPv6 MO3 IA Guidance document – drafted, coordinated, finalized, and issued document, co-signed by the DoD Deputy CIO and DNI CIO • DoD UC Master Plan (MP) – drafted, coordinated, finalized, and issued plan signed by DoD Deputy CIO			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0303169D8Z: *IT Rapid Acquisition*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• CJCSI 6211 – collaborated with JS/J6 to incorporate UC policy, responsibilities, procedures, and processes in CJCSI 6211 revision • Developed IT Infrastructure Reference Architecture (ITIOA) which is based on the Defense IT Infrastructure Library (ITIL) Catalog and provides the main basis for the Theater Synchronization Plans • Developed Draft Theater Synchronization Plans that build upon the Defense ITIL Catalog. The TSPs are the COCOMs transition plans which describe how they will move their current IT (As Is) to their near future (To Be) state • Collaborated with the National Security Agency (NSA) and the Intelligence Community (IC) to obtain Internet Protocol Version 6 (IPv6) Information Assurance (IA) and security guidance documents. • Collaborated with DoD and Federal government agencies on IPv6 Test and Evaluation (T&E) and standards issues; and monitored the National Institute for Standards and Technology (NIST) activities, reference DoD and NIST IPv6 test and certification processes and the Federal Acquisition Regulation (FAR) IPv6 requirements language. • Provided oversight for issuance of the DoD Unified Capabilities Requirements (UCR) 2008, Change 1 document and implementation by DoD Components and the vendor community, and collaborated with the Defense Information Systems Agency (DISA) on the draft DoD UCR 2008, Change 2 document. • Developed, formally coordinated, and processed the draft DoD Instruction (DoDI) 8100.ee, “DoD Unified Capabilities (UC),” to develop UC policy, responsibilities, procedures, and processes. • Incorporated a DoD UC distributed test concept, to revise the UC test and certification process, into the draft UC DoDI. • Submitted and monitored DoD UC language and performance metrics for incorporation in the Net-Centric Capability Portfolio Management (NC CPM) Strategic Plan. • Continued industry and government outreach efforts to facilitate development and implementation of DoD UC policy and processes. • Continued ongoing interoperability and supportability process improvement to create an environment for an emerging DoD NC interoperability strategy, policy, process, tools/data, and metrics into improved environment for all tiers of interoperability accountability in the DoD. • Developed IT Infrastructure Reference Architecture (ITIOA) which provided guidance on optimizing DoD IT infrastructure by taking a service delivery-based approach. It identifies a common set of IT infrastructure services and their optimal level of service delivery, forming a framework for IT consolidation and provided the foundation for the Theater Synchronization Plans. • Developed Draft Theater Synchronization Plans for PACOM. The TSPs are the COCOMs transition plans which) establishes the conditions necessary to successfully consolidate COCOM’s IT infrastructure in alignment with combatant command requirements and in sync with the DoD IT Consolidation Roadmap. • Produced preliminary DoD Controlled Unclassified Information (CUI) Transition Plan to facilitate the transformation of DoD CUI to make information mobile.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303169D8Z: *IT Rapid Acquisition*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Provided DoD contributions to Federal CUI effort leading to publication of CUI Executive Order. ***FY 2011 Plans:*** • Monitor and evaluate implementation efforts of IPv6. • Ensured IPv6 transition efforts were synchronized across all DoD Components by conducting program reviews and review of implementation plans. • Incorporate into policy guidance, new direction and OMB goals regarding the management and implementation of IPv6. • Update transition plan and policy to accommodate new guidance and technologies. • Continue to Work with DISA in providing governance and oversight of the Department's implementation of IPv6, including the review of products, identifying critical issues and making recommendations for solutions. • Continue to provide oversight and guidance to DISA in developing and refining the NIPRNET/SIPRNET infrastructure to achieve full IPv6 capability. • Continue development of the IT Infrastructure Reference Architecture • Continue developed of the Theater Synchronization Plans (TSP) that builds upon the Defense ITIL Catalog. • Collaborate with the NSA and the IC to obtain IPv6 IA and security guidance documents. • Monitor the DoD IPv6 Address Plan implementation to allocate IPv6 address space to DoD Components and the DNI. • Monitor DoD UC and IPv6 implementation funding options. • Facilitate IPv6 implementation collaboration efforts between the DoD and the DNI, and participate in IC-DoD IPv6 Collaboration Team and IC NISG meetings. • Collaborate with DoD and Federal agencies on IPv6 T&E and standards issues; and collaborate with NIST, reference DoD and NIST IPv6 test and certification processes. • Process the draft UC DoDI for Acting ASD(NII)/DoD CIO signature (signed on 3 December 2010 and posted on the DoD Directives Portal on 9 December 2010); and provide oversight for implementation of DoD UC policy, responsibilities, procedures, and processes throughout DoD. • Collaborate with DISA to finalize the DoD UC MP document, and prepare and process the package for DoD Deputy CIO signature. • Monitor the DoD UC language and performance metrics submissions for incorporation in the NC CPM Strategic Plan. • Address the U.S. Government (USG) Office of Management and Budget (OMB) FY 2012 and FY 2014 mandates for all Federal agencies to expedite operational deployment and use of IPv6; facilitate meetings of key DoD IPv6 stakeholder representatives to discuss status of IPv6 implementation within DoD and way-ahead for addressing OMB mandates; and meet with the Federal IPv6 Task Force and OMB representatives to discuss OMB goals for IPv6 deployment and use and DoD's plans for achieving those goals.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0303169D8Z: *IT Rapid Acquisition*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Continue to govern DoD UC implementation through a DoD CIO Executive Board forum, the UC SG, the UC IAC, and the IC NISG. • Continue industry and government outreach efforts to facilitate development and implementation of DoD UC policy and processes. • Continue development of the IT Infrastructure Reference Architecture and align the ITI ORA with Defense ITIL V2.0 and with the DoD IT Consolidation Roadmap. • Expand the development of the Theater Synchronization Plans (TSP) to support additional COCOMs. • Produce CUI category position in concert with USDI for inclusion in emerging Federal standards and policies. • Produce new techniques and tools to support implementation and use of CUI markings within the DoD Data Strategy for metadata marking and use in attribute based access control for Identity, Credential and Access Management. ***FY 2012 Plans:*** • Implement UC (integration of voice, video, and/or data services) DoD-wide to institutionalize UC policy (DoDI), planning guidelines (UC MP), and requirements (UCR 2008) • Govern DoD UC implementation through the DoD CIO EB, UC Steering Group (UC SG), UC Industry Advisory Council (UC IAC) • Define future UC requirements for inclusion in UCR 2010 • Provide overarching guidance, direction, and oversight for DoD UCR 2010 document development • Oversee and direct implementation of distributed test concept for UC interoperability and IA test and certification • Collaborate with industry to define future UC requirements (UCR 2010) • Oversee/direct/facilitate UCR 2010 document development to further refine UC functional, performance, and technical requirements • Govern UC through the DoD CIO EB, UC SG, UC IAC, and IC NISG • Facilitate implementation of UC distributed test concept for test and certification of UC products • Continue to monitor development of the IT Infrastructure Reference Architecture • Continue to oversee the Theater Synchronization Plans (TSP) • Collaborate with DISA and industry to define future UC requirements; and provide overarching guidance, direction, and oversight for DISA's UCR 2012 document development to further refine UC functional, performance, and technical requirements. • Meet the USG OMB FY 2012 mandate to expedite operational deployment and use of IPv6; facilitate meetings of key DoD IPv6 stakeholder representatives to discuss way-ahead for addressing the OMB FY 2014 mandate; and continue to meet with the Federal IPv6 Task Force and OMB representatives to discuss OMB goals for IPv6 deployment and use and DoD's plans for achieving those goals. • Oversee the implementation of the ITIORA for the Joint bases and expand the IT Infrastructure Reference Architecture to support installations across DoD.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0303169D8Z: *IT Rapid Acquisition*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Continue to oversee the Theater Synchronization Plans (TSP) and provide support to additional COCOMs. • Produce DoD CUI Transition Plan based upon NARA policy and emerging guidance on standards. • Implement new techniques and tools to support implementation and use of CUI markings within the DoD Data Strategy for metadata marking and use in attribute based access control for Identity, Credential and Access Management.			
Accomplishments/Planned Programs Subtotals	4.507	5.135	4.288

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

- Timely development and issuance of policy, guidance, processes, and technologies to build, populate, govern, operate, and protect the Network.
- Development of plans and implementation activities for net centric data and IPv6 transformation capabilities.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0305193D8Z: *Intelligence Support to Information Operations*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	20.450	21.272	15.002	-	15.002	15.364	15.553	15.728	16.265	Continuing	Continuing
001: *E-Space*	1.012	0.550	-	-	-	-	-	-	-	Continuing	Continuing
002: *Human Factors Analysis*	1.581	1.607	-	-	-	-	-	-	-	Continuing	Continuing
003: *IO Intelligence Integration*	12.876	14.034	9.820	-	9.820	10.078	10.161	10.228	10.461	Continuing	Continuing
004: *IO Indications and Warning*	4.981	5.081	5.182	-	5.182	5.286	5.392	5.500	5.804	Continuing	Continuing

A. Mission Description and Budget Item Justification

Details provided in Defense-Wide classified book.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	20.481	21.272	21.746	-	21.746
Current President's Budget	20.450	21.272	15.002	-	15.002
Total Adjustments	-0.031	-	-6.744	-	-6.744
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department Adjustment	-0.031	-	-0.029	-	-0.029
• Service Support Contractor adjustment	-	-	-0.185	-	-0.185
• JFCOM Efficiencies - Baseline Review. As part of the DOD reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities.	-	-	-6.530	-	-6.530

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0305193D8Z: *Intelligence Support to Information Operations*	PROJECT 001: *E-Space*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
001: *E-Space*	1.012	0.550	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Details provided in Defense-Wide classified book.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: E-Space	1.012	0.550	-
Description: Details provided in Defense-Wide classified book. ***FY 2010 Accomplishments:*** Details provided in Defense-Wide classified book. ***FY 2011 Plans:*** Details provided in Defense-Wide classified book. ***FY 2012 Plans:*** NA			
Accomplishments/Planned Programs Subtotals	1.012	0.550	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Details provided in Defense-Wide classified book.

E. Performance Metrics

Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity as defined below:

• Time – Will the effort enable the warfighter to speed up processes faster than current capabilities allow?
• Money – Will the effort enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0305193D8Z: *Intelligence Support to Information Operations*	PROJECT 001: *E-Space*

• Fidelity – Will the effort ensure unity of efforts throughout the Information Operation (IO), Cyber, and Intelligence Operations Integration (IOI) Communities?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0305193D8Z: *Intelligence Support to Information Operations*	PROJECT 002: *Human Factors Analysis*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
002: *Human Factors Analysis*	1.581	1.607	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Details provided in Defense-Wide classified book.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Human Factors Analysis	1.581	1.607	-
Description: Details provided in Defense-Wide classified book. ***FY 2010 Accomplishments:*** Details provided in Defense-Wide classified book. ***FY 2011 Plans:*** Details provided in Defense-Wide classified book. ***FY 2012 Plans:*** NA			
Accomplishments/Planned Programs Subtotals	1.581	1.607	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Details provided in Defense-Wide classified book.

E. Performance Metrics

Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity as defined below:

• Time – Will the effort enable the warfighter to speed up processes faster than current capabilities allow?
• Money – Will the effort enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0305193D8Z: *Intelligence Support to Information Operations*	PROJECT 002: *Human Factors Analysis*

• Fidelity – Will the effort ensure unity of efforts throughout the IO, Cyber, and IOI Communities?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0305193D8Z: *Intelligence Support to Information Operations*	PROJECT 003: *IO Intelligence Integration*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
003: *IO Intelligence Integration*	12.876	14.034	9.820	-	9.820	10.078	10.161	10.228	10.461	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Details provided in Defense-Wide classified book.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: IO Intelligence Integration	12.876	14.034	9.820
Description: Details provided in Defense-Wide classified book. ***FY 2010 Accomplishments:*** Continue development toward Initial Operation Capability (IOC). Continue program development in preparation for Operational Test and Evaluation. Efforts underway to establish Milestone Decision Authority and declare Vision as CAT III level program. ***FY 2011 Plans:*** Achieve successful Operational Test and Evaluation of integrative analysis TTPs, methodologies, tools, workflows and business process models. Integrate additional intelligence data sources/repositories into Vision SOA. Achieve IOC and continue spiral development, integrating new tools and other integrative analysis capabilities towards Full Operational Capabilities (FOC). ***FY 2012 Plans:*** Continue spiral development, integrating new integrative analysis tools, TTPs, methodologies, tools, workflows and business process models towards FOC.. Identify and integrate additional intelligence data sources/repositories into Vision SOA. Continue fielding to COCOMs/Services/Agencies.			
Accomplishments/Planned Programs Subtotals	12.876	14.034	9.820

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0305193D8Z: *Intelligence Support to Information Operations*	PROJECT 003: *IO Intelligence Integration*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Details provided in Defense-Wide classified book.

E. Performance Metrics

Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity as defined below:

- Time – Will the effort enable the warfighter to speed up processes faster than current capabilities allow?
- Money – Will the effort enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow?
- Realism – Will the effort enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow?
- Fidelity – Will the effort ensure unity of efforts throughout the IO, Cyber, and IOI Communities?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0305193D8Z: *Intelligence Support to Information Operations*	PROJECT 004: *IO Indications and Warning*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
004: *IO Indications and Warning*	4.981	5.081	5.182	-	5.182	5.286	5.392	5.500	5.804	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Details provided in Defense-Wide classified book.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Information Operations Indications and Warning	4.981	5.081	5.182
Description: Details provided in Defense-Wide classified book. ***FY 2010 Accomplishments:*** Details provided in Defense-Wide classified book. ***FY 2011 Plans:*** Details provided in Defense-Wide classified book. ***FY 2012 Plans:*** Details provided in Defense-Wide classified book.			
Accomplishments/Planned Programs Subtotals	4.981	5.081	5.182

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Details provided in Defense-Wide classified book.

E. Performance Metrics

Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity as defined below:

• Time – Will the effort enable the warfighter to speed up processes faster than current capabilities allow?
• Money – Will the effort enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0305193D8Z: *Intelligence Support to Information Operations*	PROJECT 004: *IO Indications and Warning*

• Fidelity – Will the effort ensure unity of efforts throughout the IO, Cyber, and IOI Communities?

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0305400D8Z: *Warfighting and Intelligence-Related Support*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	0.822	0.845	0.861	-	0.861	0.884	0.896	0.909	0.935	Continuing	Continuing
400: *Warfighting and Intelligence-Related Support*	0.822	0.845	0.861	-	0.861	0.884	0.896	0.909	0.935	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program supports the alignment of policies and programs with current operational requirements, oversight and sufficiency of special access programs, conduct of various intelligence-related activities and warfighter support efforts, strategies and assessments, and alignment of cutting-edge and emerging technologies for warfighter needs.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	0.823	0.845	0.862	-	0.862
Current President's Budget	0.822	0.845	0.861	-	0.861
Total Adjustments	-0.001	-	-0.001	-	-0.001
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department adjustment	-0.001	-	-0.001	-	-0.001

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Warfighting and Intelligence-Related Support	0.822	0.845	0.861
FY 2010 Accomplishments: Continued to develop new concepts, and conduct studies and assessments to develop strategies for aligning, creating policies, technology exploration, to support the oversight of the Defense Intelligence Enterprise.			
FY 2011 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0305400D8Z: *Warfighting and Intelligence-Related Support*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Continued to develop new concepts, and conduct studies and assessments to develop strategies for aligning, creating policies, technology exploration, to support the oversight of the Defense Intelligence Enterprise. ***FY 2012 Plans:*** Will continue to develop new concepts, and conduct studies and assessments to develop strategies for aligning, creating policies, technology exploration, to support the oversight of the Defense Intelligence Enterprise.			
Accomplishments/Planned Programs Subtotals	0.822	0.845	0.861

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	39.364	92.253	59.958	-	59.958	78.677	60.413	62.645	62.904	Continuing	Continuing
758: *JOINT NATIONAL TRAINING CAPABILITY (JNTC)*	17.825	19.559	11.818	-	11.818	16.099	16.312	17.797	17.308	Continuing	Continuing
759: *JOINT INNOVATIVE TRAINING METHODS & TOOLS (JITMT)*	1.970	1.994	-	-	-	-	-	-	-	Continuing	Continuing
761: *JOINT SIMULATION SYSTEMS (JSS)*	7.310	7.208	-	-	-	-	-	-	-	Continuing	Continuing
764: *IRREGULAR WARFARE (IW)*	3.700	17.772	11.515	-	11.515	14.953	16.171	17.309	17.571	Continuing	Continuing
769: *JOINT KNOWLEDGE DEVELOPMENT & DISTRIBUTION CAPABILITY (JKDDC)*	2.170	2.194	1.234	-	1.234	1.614	2.243	1.852	2.322	Continuing	Continuing
760: *Congressional Transactions*	6.389	-	-	-	-	-	-	-	-	Continuing	Continuing
770: *U.S. Forces Korea Training and Exercise Support*	-	10.211	7.504	-	7.504	7.436	4.398	1.442	1.363	Continuing	Continuing
754: *Immersive Simulation*	-	33.315	21.868	-	21.868	32.605	14.862	17.240	16.950	Continuing	Continuing
701: *Air Force JNTC*	-	-	2.408	-	2.408	2.023	2.286	2.689	2.765	Continuing	Continuing
772: *Navy JNTC*	-	-	3.611	-	3.611	3.947	4.141	4.316	4.625	Continuing	Continuing

A. Mission Description and Budget Item Justification

These programs are part of a coordinated effort to develop and deploy capabilities for rapidly linking and integrating Live, Virtual, and Constructive (LVC) forces for Services, Combatant Commanders (COCOMs), coalition, and other government agencies. These programs will create a realistic battlespace environment in which to train as a Joint Warfighting force to meet emerging mission requirements including the Long War. These investments support the Secretary of Defense's (SECDEF) Commanders Exercise and Engagement Training Transformation (CE2T2) initiative to enable and enhance Joint Warfighting readiness by training as we intend to fight. The elements associated with this coordinated effort consist of:

- Joint National Training Capability (JNTC)
- Joint Innovative Training Methods & Tools (JITMT)
- Joint Simulation Systems (JSS)

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*

- Irregular Warfare Functional Training Capability (IW)
- Joint Knowledge Development & Distribution Capability (JKDDC)
- U.S. Forces Korea Training & Exercise Support (USFK)
- Immersive Trainer
- Air Force JNTC

JNTC: Initially established in 2003, JNTC continues to develop and integrate Advanced Training Technologies into a seamless Joint training environment. JNTC establishes the overarching Joint framework and context necessary for COCOMs and Services to achieve a Joint training environment through an integrated network of training sites and nodes. JNTC provides the common standards, architecture, and development processes required to link Joint training programs. By leveraging existing training programs or initiating specific actions, JNTC is developing credible opposing force capabilities and expanded access to assets typically unavailable to the training audience by developing and integrating modeled and simulated representations of these capabilities. This furthers the integration of Joint training objectives into Service training events, while capturing the objective data necessary to provide a complete and accurate after action review. This program develops and enhances current and future Joint training enterprise capabilities.

JITMT: This effort provides innovative acquisition strategy to foster reuse of data, software and components to support a modular joint training system toolkit and reduce the cost of training. JITMT also has a component that reengineer's joint training for more effective learning in realistic environments, enables individual and collective training and mission rehearsal through performance based learning in virtual, gaming and mixed reality environments and develops efficient next generation agile architectures and common standards that provide flexibility and adaptability as required by the CCJO and next generation training strategy. These efforts increase warfighter Joint training capabilities with improved constructive simulations and streamlined acquisition processes, leveraging industry training methodologies and technologies to provide on-demand Joint training tailorable to COCOM requirements for Joint Task Force headquarters staffs and individuals.

JSS: This effort provides warfighters with enhanced Joint Live, Virtual, and Constructive (JLVC) based training capabilities resident in the Joint Force Trainer Toolkit (JFTT). The JFTT is a set of training enablers, and "certified systems" that are interoperable and acceptable for usage within the Joint training environment. The JFTT is a one-stop shop that enables Services, COCOMs, Agencies and Coalition partners to deliver trained, capable, and interoperable Joint Forces.

IW: This research and development effort closes training gaps at the tactical and operational level and ensures our General Purpose Forces (GPF) receive immersive, pre-deployment training equal to that provided to Special Forces. This effort researches, develops and integrates human terrain/cueing/profiling training, enhanced and distributed interagency team training, cultural awareness training, mixed reality training, and distributed training technologies that enhance IW training for GPF. As part of a national effort, IW will integrate and leverage Joint, Service, Interagency and academic initiatives for improving ground combat performance of small unit individuals, leaders and teams in the operating environment-focusing on the hybrid threat-to avoid duplication of efforts can achieve integration and synergy. JNTC IW integrates human, cultural and social science subject matter experts, establishing laboratory and training facilities with access to urban live fire, and maneuver training facilities and civilian population centers. Develop rapid reach back and reach forward mechanisms to convert current operational practices into training practices, and by providing state of the art simulations on par with aviation and maritime simulation and training capabilities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*

JKDDC: Develop a Joint Individual Training Toolkit of web enabled individual and small group training products and services. Products and services developed in response to JKDDC stakeholder (COCOMs, Services, and Combat Support Agencies) prioritized training requirements. JKDDC supports a career-long joint learning continuum, joint professional military education and tailored common training standards to Service members for tasks that are jointly executed, resulting in trained, capable, and interoperable joint forces. This supports advanced technology development and enhancement for the Joint Advanced Distributive Learning training community. JKDDC advanced technology initiatives principally include the Virtual Cultural Awareness Training (VCAT) web-based gaming and Small Group Scenario Trainer (SGST), both accessible via the Joint Knowledge Online (JKO) Learning Management System. This capability facilitates the training and preparation of tens of thousands of military and civilian personnel deployed to combat theaters of operation prior to serving in their assigned Joint Task Force (JTF) billets. Specifically, VCAT supports one of the top three identified training shortcomings of returning warriors from United States Central Command (CENTCOM) based JTF cultural awareness training. JTF 'battle staffs' will be adequately trained warriors, as individuals and the staffs collectively based on SGST development and overcoming existent training inadequacies for joint warriors.

USFK: This program will develop a Jointly Accredited and Supported Modeling & Simulation federation of constructive simulations capable of satisfying all joint exercise training requirements in the Korean Theater of Operations that is interoperable with the Republic of Korea developed Korean Simulation System. This solution will be capable of interoperating in a common battlespace that realistically represents the operating environment to all levels of training audiences, tactical to strategic, in Korean theater exercises. While supporting USFK's specific requirements, this solution will contain enhancements that will benefit all users of the JLVC.

Immersive Trainer: As part of the Department of Defense's shift to building Irregular Warfare (IW) capability and recognizing the percentage of casualties taken in close combat will support development of infantry immersive training simulators as part of a broader national effort for small unit excellence. While highlighted by the need to adapt simulation now to IW demands, the value of enhanced infantry small unit immersive simulation will contribute to small unit proficiency and survival across the range of military operations, from irregular to conventional.

Air Force JNTC: Supports the SECDEF's Transformation in Training/Joint National Training Capability (JNTC). Develops capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Using a scientific and phased approach and focusing on modeling air and space capabilities, researches new technologies and methods that provide a crucial technology-based fondation supporting all JNTC operations.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	33.975	92.253	93.525	-	93.525
Current President's Budget	39.364	92.253	59.958	-	59.958
Total Adjustments	5.389	-	-33.567	-	-33.567
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• OSD Managed Program Reduction	-	-	-13.000	-	-13.000
• JFCOM Disestablishment	-	-	-19.170	-	-19.170
• Reducing DOD Reliance on Service Support Contractors	-	-	-0.509	-	-0.509
• Program Transfer	-	-	4.311	-	4.311
• Economic Assumptions	-	-	-0.113	-	-0.113
• Realignment of Funds to Support Higher Priorities	-	-	-3.510	-	-3.510
• Efficiencies	-	-	-1.576	-	-1.576
• Congressional Add: Integrated Analysis	2.000	-	-	-	-
• Congressional Add: Agile Software Capability	1.200	-	-	-	-
• Congressional Add: Playas Training and Research	3.200	-	-	-	-
• General Program Reductions	-1.011	-	-	-	-

Change Summary Explanation

1. Efficiencies: Eliminates 4 of the 15 Joint Force Trainer functions: joint intelligence training/standards; joint forces intelligence school; field assessment of joint fires training; and training on selected joint fires issues. Reduces the remaining Joint Force Trainer functions by 38 percent, and reduces Special Operations Command Joint Force Command (SOCJFCOM) by 30 percent. Eliminates the Joint Task Force Headquarters Readiness (JTF HQ) function.

2. Agile Software Capability Intervention (ASCI) $1.200 - The ASCI is a process and development activity that provides a distributed testbed solution to the complex software development in the Modeling & Simulation (M&S) domain. Focus is on the JLVC federation and requirements to represent the federation on an Enterprise level in a Service Oriented Architecture (SOA). In addition, ASCI principles are applied to process and development activities to provide database

initialization solution for complex software development in the M&S domain. Focus is on the Joint Rapid Scenario Generation requirements to represent the capability on an Enterprise level in a SOA. Provides subject matter expertise, rapid reconfiguration laboratory assessment and certification of distributed test bed, products, and documentation review supporting productivity enhancements through use of ASCI in the Joint Training Environment. The ASCI project will focus on 30-day development sprints culminating in deliberate distributed test events supported by the Joint Advanced Training Technology Laboratory (JATTL). The outcome of this effort will result in demonstratable events in the JATTL using the new SOA JLVC federation supporting Political, Military, Economic, Information, and Infrastructure capability.

3. Integrated Analysis Environment $2.000 - Provides enhanced joint training capability for the Home Station Training Program. Supports virtual worlds concept and distributed units in a LVC synthetic training environment. Integrate future immersive training capabilities into the joint operational environment. Builds upon USJFCOM M&S vision through development of an implementation plan and proof of concept demonstration. Supports J7 move towards Service construct (freeform type training) and Unified Agile Architecture. Consolidates and aligns USJFCOM Modeling and Stimulation Support Activities including Training, Exercises, Mission Rehearsal, Mission Planning, Experimentation and Rapid Scenario Generation.

4. Playas Training and Research Center (PTRC) Joint Training Experiment $3.200 - PTRC Joint Training Experiment provides a platform for training, evaluation and/or certification of Active and Reserve Component joint formations in intergovernmental and interagency missions. Integrate with JNTC architecture and standards. Adapt and enhance PTRC capabilities to meet the evolving needs of Active and Reserve Component joint formations in intergovernmental and interagency missions. Enhance government infrastructure capability at PTRC. Become an accredited, integral component of the Joint Training Environment (JTE) and provide dedicated program management and coordination with research institutions and JTE representatives. Monitor execution, perform analysis, conduct tests and establish transition strategy and support. Partnership between New Mexico Tech, New Mexico State University (NMSU) and White Sands Missile Range (WSMR).

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 758: *JOINT NATIONAL TRAINING CAPABILITY (JNTC)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
758: *JOINT NATIONAL TRAINING CAPABILITY (JNTC)*	17.825	19.559	11.818	-	11.818	16.099	16.312	17.797	17.308	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

DoD directed USJFCOM to establish the JNTC Advanced Training Technology to develop future training concepts and capabilities. The mission is to develop robust research, development test and evaluation (RDT&E) capabilities that integrate Live, Virtual, and Constructive (LVC) elements into a seamless Joint training environment. JNTC creates Joint warfighting conditions through a networked collection of interoperable training sites, ranges, and nodes that synthesize personnel, doctrine, and technology to deliver and achieve "Joint Context" for COCOM and Service training requirements. JNTC provides RDT&E within an LVC distributed test-bed supporting the advancement of training technologies in the context of a Joint integrated battle space. The test bed operates as a continuous training RDT&E environment, providing the foundation for a distributed and deployable Mission Rehearsal System, integrating live Intelligence, Surveillance and Reconnaissance feeding the Common Operational Picture. These funds provide critical Joint/Coalition Service members and interagency partner's enhanced training to allow requisite enhancements to existing training systems, capabilities, and technologies. These enhancements improve training efficiencies and provide an integrated LVC environment. This capability precludes the necessity for conducting large-scale live exercises to achieve the SECDEF's Commanders Exercise and Engagement Training and Transformation (CE2T2) vision.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: P758 Joint National Training Center (JNTC)	17.825	19.559	11.818

Description: Initially established in 2003, JNTC continues to develop and integrate Advanced Training Technologies into a seamless Joint training environment. JNTC establishes the overarching Joint framework and context necessary for COCOMs and Services to achieve a Joint training environment through an integrated network of training sites and nodes. JNTC provides the common standards, architecture, and development processes required to link Joint training programs. By leveraging existing training programs or initiating specific actions, JNTC is developing credible opposing force capabilities and expanded access to assets typically unavailable to the training audience by developing and integrating modeled and simulated representations of these capabilities. This furthers the integration of Joint training objectives into Service training events, while capturing the objective data necessary to provide a complete and accurate after action review. This program develops and enhances current and future Joint training enterprise capabilities.

FY 2010 Accomplishments:

•Completed research, planning and engineering to transition Joint Training and Enterprise Network (JTEN) to Next Generation (NextGen) JTEN and complete Global Information Grid (GIG) alignment of the JTEN.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 758: *JOINT NATIONAL TRAINING CAPABILITY (JNTC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
•Completed research to identify commercial off the shelf/government off the shelf alternative means of extending the JTEN to remote/austere locations and locations where security constraints do not permit persistent installation of JTEN service delivery points. •Researched and evaluated communication technologies that will facilitate the distribution of mixed-reality training around the globe. This involved the use of distributed training methodologies for remotely-based operators/participants. The technologies would facilitate home-station operations vice having to relocate operators to remote locations. The technologies would also ensure warfighter's pre-deployment training would mirror real-world operations as closely as possible. •Developed and tested a coalition training network reference architecture with the Navy and the Air Force to facilitate trusted-partner participation in training exercises. The effort provided exercise participants and engineers basic design requirements for integrating the coalition partners into the Joint training environment to more closely mirror real-world operations. •Completed interoperability tests and assessments with the United States Air Force's Combat Air Force Distributed Mission Operations (CAF DMO) Office to define and document standards and architectures. •Developed and released block 3 of an enterprise solution to enable near-real time and post event assessment of the Joint Warfighters performance. •Continued developing and integrating remote Command & Control (C2), full effective radiated power (ERP), reactive electronic attack response and durability upgrade into existing Multi-Spectral Threat systems providing threat Surface to Air Missile system surrogates for enhanced BLUE FORCE (BLUFOR) training. •Conducted research of new and emerging technologies such as immersive virtual technologies, story driven training, light simulation/federations, massive-multiplayer online games, training objective driven simulations, embedded training, and Joint community unique simulations for application to enhance the Joint training environment. •Maintained the Joint Advanced Training Technologies Laboratory (JATTL), a 28,000 square foot state-of-the-art laboratory that replicates the Joint Training Environment, and is the nucleus that enables JNTC research and development activities. •Analyzed, certified and assessed eleven training systems for Joint interoperability with and integration into the Joint Training Enterprise thereby reducing future costs and exercise preparation time. •Integrated the National Security Agency's (NSA) Joint Cryptologic Mission Simulation (JCMS) system with Joint Live Virtual Constructive JLVC training federation. This will deliver the full capability of the NSA to the warfighter in a training environment thus providing an enhanced capability to train all Service Signals Intelligence (SIGINT) analysts and allow joint and Service staffs to integrate SIGINT capabilities into training events prior to deployment. •Developed and released the Joint Conflict and Tactical Simulation (JCATS) version 9.0 with significant new capabilities that improved chemical and biological attack representation, amphibious assault modeling, an easier to use graphical user interface, improved scenario management capabilities and an improved Control C2 systems stimulation capability.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 758: *JOINT NATIONAL TRAINING CAPABILITY (JNTC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
•Developed and released the Joint Training Data Service (JTDS), a rapid scenario generation capability for the Joint Training Enterprise, to the U.S. Army's III Corps Battle Command Training Center (BCTC), US Army Central (ARCENT) and the U.S. Army Europe (USAREUR) Joint Multinational Simulation Center. This activity will reduce training event support costs to Joint training environment and Service training elements by reducing or eliminating the need for duplicative target and infrastructure data producing services. •Developed over 30 simulation terrain databases used for a wide variety of model and simulations providing high-quality, highly-detailed, and correlated virtual and constructive Modeling & Simulation (M&S) terrain databases that will support pre-deployment training and avoid costly duplication. •Developed a terrain database to support the 101st Airborne Division (Air Assault) to rehearse Counter-Improvised Explosive Device (C-IED) Situational Training Exercises in the BCTC at Ft. Campbell, KY. •Developed a terrain-specific Afghanistan Virtual Battlespace 2 terrain database for the 1st Squadron, 38th Cavalry Regiment (Reconnaissance and Surveillance) for mission rehearsal prior to deployment and continued training in theater. •Supported US Strategic Command and all COCOM/ Service stakeholders within the All Things Missile (ATM) effort by initiating development of Joint integration and Development System documentation to establish ATM as a program of record. This will enable a scalable, dynamic, low overhead technical capability in support of missile mission training from the strategic to tactical level. •Developed collaborative information environment tools that integrate with Net Centric Enterprise Services (NCES) and products in order to provide enhanced exercise planning, mission rehearsal, and exercise control within Joint training environment. Such Net Centric Enterprise Services integration include: •Completed research, development, and testing for a prototype web service data exchange with an external DoD data system. •Completed automation for data input, key word search, and report generation requirements analysis functions related to the J7 Training Development process. •Qualified the Defense Intelligence Agency (DIA) configuration of Tenix Diode Cross Domain Solution for use as a one-way link between the unclassified and classified training environments as a low cross solution for the joint training environment. •Continued pilot project to validate a Joint Navy-Air Force – JFCOM Joint Training Environment Common Domain Information Sharing Enterprise Solution. •Funded an effort to synchronize scheduled releases of JLVC with a certified Combat Direction System that supports JLVC changes. ***FY 2011 Plans:*** ••Developed, integrated, tested, and delivered block 5 of the Joint After Action Review Resource Library (JAAR-RL), an enterprise solution which enables near-real time and post event assessment of Joint Warfighter performance leveraging previous R&D			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 758: *JOINT NATIONAL TRAINING CAPABILITY (JNTC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
investments made in the test and training communities by integrating Service and DoD capabilities previously developed. Block 5 release provides an accredited and certified full operational JAAR-RL capability to the Joint training programs in accordance with (IAW) the DoD Information Assurance Certification and Accreditation Process (DIACAP). •Developed, tested, and released the FY11 update of the JNTC Test and Training Enabling Architecture (TENA) Logical Range Object Model (LROM), incorporating major structural changes made in the latest version of the TENA middleware and latest changes to Service live range capabilities enabling interoperable instrumentation between Service training ranges and instrumentation systems delivering new Joint capabilities IAW the T2 I-plan initiative, “3.3. Range Modernization.” • Implemented Afghanistan Mission Network-Training Federation (AMN-TF) initial operational capability during support of Unified Endeavor 11-2 mission rehearsal event. • Expanded ACGU network training capability to allow connectivity of national command and control networks with training network to add a significant degree of realism to Australia, Canada, Great Britain and United Stated (ACGU) training events. • Completed development United States segment of the AMN-TF in support of forces training for deployment to International Security Assistant Force-Afghanistan. Provided capabilities that fundamentally transform joint and coalition training as forces use a common network. Created the foundation for a future North Atlantic Treaty Organization (NATO) training network. Implemented AMN-TF initial operational capability during support of Unified Endeavor 11-2 mission rehearsal event. • Accomplished non-guarded cross domain environment for trusted mission partners ACGU, allowing ACGU nations to connect training networks for conduct of bi-lateral or multi-lateral training. Expanded ACGU network training capability to allow connectivity of national command and control networks with training network to add a significant degree of realism to ACGU training events. • Initiated JFCOM/Navy/Air Force Cross Domain Information Sharing Pilot Program (Navy as Lead Service) to research and develop a network guard, cross domain solution suitable for use across spectrum of US networks, which include addition of coalition partners. •Completed Phase II development, and integration of the Operational Forces Command and Control network at Naval Air Station Fallon Range Complex which will provide a threat Integrated Air Defense System and enhance training environment realism. Initiated Phase III development which will result in integration of target data receivers, Fox Plot Extractors, Test and Training Enabling Architecture, and threat radars. •Completed hardware/software installation for the display of Link-16 data on the Large Area Training Range displays. •Completed Battlefield Communication Simulation System, increment two, development for Navy application which resulted in successful installation onboard the USNS Prevail. Initiated increment three for Air Force Special Operations Command application which will provide a remote controlled simulated integrated air defense communications network. •Completed the Multi-Spectral Threat System remote command and control and durability upgrade, and continued developing and integrating full effective radiated power and reactive electronic attack response into existing systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 758: *JOINT NATIONAL TRAINING CAPABILITY (JNTC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
•Continued the Massachusetts Institute of Technologies (MIT) Lincoln Laboratory "Lariat" Information Operations Traffic Generation tool development which provides written communications over training computer networks for Computer Network Attack, Exploitation, and Defense training. •Continued the development of the Sandia Nation Laboratory "Cyber Situational Awareness" providing new analysis algorithms to exploit internet attack data, and prototype situational awareness engine & visualization tools. •Initiated the development of Track Data Fusion Engine/ Adaptable Range Exercise System for incorporation into the 9C2 opposing forces Network at Pacific Alaska Range Complex and Naval Air Station Fallon. •Initiated the development and upgrade to the Multiple Integrated Laser Engagement System (MILES) threat weapon system probability of kill/probability of hit data. Most opposing forces weapon systems use blue forces data which produces/replicates incorrect weapons capabilities. This effort provides updated unclassified probability of kill/probability of hit data. •Initiated Phase I Navy Fury III development. This effort resulted in Fury being used as a ground truth receiver for real world radios and as a communications jammer at Naval Air Station Fallon, and provided installation of Fury on the USNS Prevail and on a mobile platform at Southern California Offshore Range. •Developed automated system interfaces for on-demand data access to external authoritative reference of Universal Joint Task List maintained by Joint Staff J7. This provides real-time cross reference to the authoritative Universal Joint Task definitions for J7 planning and J7 training development. •Completed automation for data input, key word search, and report generation functions of the J7 Training Development process. •Completed workflow automation for Front End Solution Analysis that is part of the J7 Training Development Process. •Develop and implement a Service Oriented Architecture approach for Joint training information applications by creating interfaces between Joint training web applications and the JFCOM Enterprise document management system. This will provide greater access to information and reference document resources. •Continue to gather requirements and refine capabilities for Joint Training data automation. •Develop system integrations and access to enterprise information resources that facilitate improved planning processes for Joint Training. •Continued the research and engineering effort to support migration of current Joint Training and Enterprise Network (JTEN) 1.0 to JTEN 2.0 capability. This will accomplish Global Information Grid (GIG) alignment for future transition that will enable the Joint training environment through a GIG service. ***FY 2012 Plans:*** •Develop, integrate, test, and deliver Joint After Action Review Resource Library (JAAR-RL) Block 6, an enterprise solution which enables near-real time and post event assessment of Joint Warfighter performance leveraging previous R&D investments made in the test and training communities by integrating Service and DoD capabilities previously developed. Begin research, development,			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 758: *JOINT NATIONAL TRAINING CAPABILITY (JNTC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
and testing of advanced data mining technologies to leverage JAAR-RL capabilities deployed to the Joint training programs to support warfighter performance assessment. •Develop, test, and release the FY12 update of the JNTC Test and Training Enabling Architecture (TENA) Logical Range Object Model (LROM), incorporating changes made in the TENA middleware and Service live training range capabilities. Enables Joint and Service live ranges to take advantage of the new capabilities provided in the middleware and changes to Service live range capabilities enabling interoperable instrumentation between Service training ranges and instrumentation systems delivering new Joint capabilities IAW the T2 I-plan initiative, "3.3. Range Modernization."			
Accomplishments/Planned Programs Subtotals	17.825	19.559	11.818

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0804767D8Z: *JNTC O&M Funding*	65.600	60.505	64.557		64.557	64.248	63.385	63.039	61.778	Continuing	Continuing
• 0804767D8Z-: *JNTC Procurement Funding*	13.590	25.650	23.722		23.722	28.011	25.575	25.412	24.904	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

The USJFCOM Joint Warfighting Center (JWFC) Joint Force Trainer Enterprise Resource Planning Board (JFT ERPB) established in FY07 reviews all RDT&E equities. The JFT ERPB consists of senior technical, operational, program manager, and stake holder representatives within the Joint Force Trainer Community. The board's responsibilities encompass merging and prioritizing technical training requirements. It apportions work to the RDT&E elements based on an assessment of where the work is best accomplished. The board will evaluate the efficacy of development efforts based on performance metrics and will vote on whether or not to continue the effort. This process will ensure the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

- Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?
- Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?
- Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?
- Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	**PROJECT** 758: *JOINT NATIONAL TRAINING CAPABILITY (JNTC)*

The ERPB is the strategic management forum where the outcomes of performance relative to our external customers, stakeholders, and strategic stewardship of resources are the focus of discussion. Performance against the targets will be assessed and reported monthly, briefed quarterly to the ERPB, and rolled up into the JWFC Joint Training End-of-Fiscal Year Performance Report to ensure transparency and accountability.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 759: *JOINT INNOVATIVE TRAINING METHODS & TOOLS (JITMT)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
759: *JOINT INNOVATIVE TRAINING METHODS & TOOLS (JITMT)*	1.970	1.994	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Joint Force Trainer supports development capabilities in Joint simulations to eliminate training gaps identified by the Combatant Commanders (COCOMs) and in accordance with Secretary of Defense's Training and Transformation objectives. In accordance with the Unified Command Plan 2006, US Joint Forces Command (JFCOM), Joint Warfighting Center leads the development and implementation of system architectures that directly support distributed Joint training requirements of the other COCOMs, Joint Task Forces, and Defense Agencies. The underlying premise of JITMT centers on privatization of training support and development with the competitive market forces driving the development of technologies to reduce the cost of training. The creation of a JFCOM Joint Oversight Board establishes a governance process to review the effectiveness of the tools and the providers. Management of the toolkit, which is a set of capabilities, and system certified technologies that are interoperable and acceptable for usage within the Joint training environment and supports; Joint Exercises, Doctrine, Lessons Learned, Distributed Learning, and Modeling & Simulation (M&S). There will be a government-led Consortium with industry and academia that ensures the tools in the toolkit comply with the requirements of the common architecture. A number of emerging technologies from Industry, Government and Academic sources that offer the greatest potential to reengineer Joint training are considered for training use. These technologies include Light Simulations, Light Federations, Story-Driven Training, Massively-Multi-player Games, Training Objective Driven Simulation, Embedded Training, and Joint Community Unique Simulations

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: P759 Joint Training Capability Analysis of Alternatives (TCAoA)	1.970	1.994	-
Description: This effort provides innovative acquisition strategy to foster reuse of data, software and components to support a modular joint training system toolkit and reduce the cost of training. JITMT also has a component that reengineer's joint training for more effective learning in realistic environments, enables individual and collective training and mission rehearsal through performance based learning in virtual, gaming and mixed reality environments and develops efficient next generation agile architectures and common standards that provide flexibility and adaptability as required by the CCJO and next generation training strategy. These efforts increase warfighter Joint training capabilities with improved constructive simulations and streamlined acquisition processes, leveraging industry training methodologies and technologies to provide on-demand Joint training tailorable to COCOM requirements for Joint Task Force headquarters staffs and individuals.			
FY 2010 Accomplishments: • Provided a course training task analysis on the Defense Support to Civil Authorities (DSCA) course.			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 759: *JOINT INNOVATIVE TRAINING METHODS & TOOLS (JITMT)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Developed procurement package for full and open competitive contract to enhance and standardized DSCA course. • Integrated Joint Composable Object Model common standards and open architectures to support net-centric data strategy and enable interoperability of mixed architecture training environments. • Developed integrating architecture ontology for High Level Architecture (HLA) 1.3, HLA 1516 evolved, Test and Training Enabling Architecture, Distributed Inactive Simulation and Common Training Instrumentation Architecture to support proof of concept evaluation for JLVC federation integration of new systems. • Delivered first Technical and Operational Demonstrations of Future Immersive Training Environment. This enhances small unit home station training through inoculation of cognitive, visual, audio, thermal, olfactory effects and chaos of battle in a fully immersive live virtual constructive environment. • Performed an Expeditionary Theater Opening Doctrine, Organization, Training, Materiel, Leadership and education, Personnel and Facilities Change Recommendation Front End Analysis (FEA) and identified potential program savings for way ahead. • Developed, integrated and demonstrated Joint Conflict and Tactical Simulation and Chemical Biological Simulation capability in the Chemical, Biological, Radiological, Nuclear and high yield Explosives Tactical Training System. ***FY 2011 Plans:*** •Enhanced emerging technologies such as immersive virtual technologies, story driven training and massive-multiplayer online game technology to develop two new prototypes for Joint community unique simulations in support of JITMT gaps. • Implemented DSCA Front End Analysis recommendations. • Developed and Refined Defense Support Civil Authorities (DSCA) courseware proof of concept. • Investigated and Identified other National Planning scenario candidates for inclusion in the JLVC and DSCA Small Team Immersive Training Capability (STITC). • Designed the multi-architecture framework proof of concept exercise planning and execution. • Developed LVC Architecture Framework (LVCAF) repository proof of concept. • Performed FEA for Joint Theater Level Simulation (JTLS). • Developed innovative acquisition package for restructure of JTLS. • Enhanced existing web-based, immersive technologies simulations to enable advanced problem solving, enhanced decision-making, and leadership skills for the Joint, Interagency, Intergovernmental and multi-national players deployed in Global War on Terrorism. • Commenced implementation of an over-arching M&S vision strategy (gaming, immersive, etc.) that is Joint training focused, yet coordinated with Service training capability requirements and RDT&E plans to identify future innovative prototypes and acquisition strategies (long term Measures of Effectiveness).			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 759: *JOINT INNOVATIVE TRAINING METHODS & TOOLS (JITMT)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Researched and developed a Service Orientated Architecture construct for Joint training federation, and implement a live, virtual, and constructive capability to support COCOM and North Atlantic Treaty Organization (NATO) events. • Developed Net-Centric Data Strategy (NCDS) for terrain, order of battle, weather, targeting, and infrastructure that provides faster and higher-fidelity mission rehearsals through improved interoperability. • Analyzed the effectiveness of using Massively Multiplayer Games, Story-Driven Training, and Light Simulations/Federations for COCOM training requirements. • Enhanced small unit home station training through inoculation of cognitive, visual, audio, thermal, olfactory effects and chaos of battle in a fully immersive live virtual constructive environment. ***FY 2012 Plans:*** •			
Accomplishments/Planned Programs Subtotals	1.970	1.994	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0804767D8Z: *PROC-Joint Innovative Training Methods & Tools (JITMT)*			1.169		1.169	1.239	1.092	1.110	1.132	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

The USJFCOM Joint Warfighting Center (JWFC) Financial Management Board (FMB) and Contract Acquisition Management Board (CAMB) review all Research Development Test and Evaluation (RDT&E) equities. The JWFC FMB/CAMB consists of senior technical, operational, program manager, and stakeholder representatives within the Joint Force Trainer Community. The board's responsibilities encompass merging and prioritizing technical training requirements. It apportions work to the RDT&E elements based on an assessment of where the work is best accomplished. The boards evaluate the efficacy of development efforts based on performance metrics and will vote on whether or not to continue the effort. This process will ensure the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

• Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?
• Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 759: *JOINT INNOVATIVE TRAINING METHODS & TOOLS (JITMT)*

• Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow?
The Performance Improvement and Information Management Board is the strategic forum where the outcomes of performance relative to our external customers, stakeholders, and strategic stewardship of resources are the focus of discussion. Performance against the targets will be assessed and reported monthly, briefed quarterly to the FMB/CAMB, and rolled up into the JWFC Joint Training End-of-Fiscal Year Performance Report to ensure transparency and accountability.

Short Term MOEs:
• One innovative acquisition strategy that will provide effective team training events at 85% of current training costs to achieve the same training and mission rehearsal objectives, and utilize advanced distance learning online via courseware, prior to convening resident training.
• Two innovative training prototypes per year, that allows training audiences to master 80% of training objectives. This includes online courseware, agile architectures and common standard development with testing and certification to allow training audience to master vast knowledge prior to entering a traditional classroom situation.

Long Term MOEs:
• Develop Joint Theater Level Simulation innovative acquisition strategy, that provides replacement of an obsolete model. New product should provide effective staff level training at 65% of current training costs to achieve the same training and mission rehearsal objectives. This will allow for the implementation of standardized training for DoD, Agency and Coalition students. This standardized training capability will provide uniform knowledge, capabilities and individual skills for staff level participants.
• Eight innovative training prototype capabilities, each tested with an immersive capstone event leveraging working knowledge of policy, tactics and procedures, which will allow training audiences to master 90% of training objectives.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 761: *JOINT SIMULATION SYSTEMS (JSS)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
761: *JOINT SIMULATION SYSTEMS (JSS)*	7.310	7.208	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Secretary of Defense Program Decision Memorandum dated 12 Dec 2003 tasked USJFCOM with the responsibility of maintaining JSS software and establishing a Software Support Facility at the Joint Warfighting Center, This program supports the development of capabilities in Joint simulations to eliminate COCOM identified training gaps.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: P761 Joint Simulation System (JSS)	7.310	7.208	-
Description: This effort provides warfighters with enhanced Joint Live, Virtual, and Constructive (JLVC) based training capabilities resident in the Joint Force Trainer Toolkit (JFTT). The JFTT is a set of training enablers, and "certified systems" that are interoperable and acceptable for usage within the Joint training environment. The JFTT is a one-stop shop that enables Services, COCOMs, Agencies and Coalition partners to deliver trained, capable, and interoperable Joint Forces. ***FY 2010 Accomplishments:*** • Enhanced logistics modeling-and-simulation (M&S) capabilities to fully support global deployment requirements of U.S. Transportation Command. • Provided an initial Marine Corps air and amphibious capabilities through the integration Marine Air Ground Task Force Tactical Warfare System • Enhanced the Air Force's Air and Space Collaborative Environment Information Operations Suite (ACE-IOS) to provide a more robust intelligence capability. • Implemented an initial psychological operations capability in the Joint, Live, Virtual (JLVC), and Constructive Federation. • Established data services for terrain,, weather, targeting, and infrastructure, to provide faster and higher-fidelity mission rehearsals for both constructive models and gaming engines. • Provided enhanced signal intelligence (SIGINT) capability in the JLVC by integrating the Joint Cryptologic Mission Simulation trainer. ***FY 2011 Plans:*** • Documented existing standards and protocols needed to enable greater virtual trainer integration into the JLVC.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 761: *JOINT SIMULATION SYSTEMS (JSS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Provided an initial Integrated Air and Missile Defense M&S capability for training audiences from the Strategic to Service component level within the JLVC. • Identified and document technical requirements for an initial M&S Space training capability. • Enhanced and integrated Marine Corps air and amphibious capabilities through the integration Marine Air Ground Task Force Tactical Warfare System within the JLVC. • Provided an initial low cost /low overhead M&S training capability. ***FY 2012 Plans:*** •			
Accomplishments/Planned Programs Subtotals	7.310	7.208	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

The USJFCOM Joint Warfighting Center (JWFC) Financial Management Board (FMB) and Contract Acquisition Management Board (CAMB) review all Research Development Test and Evaluation (RDT&E) equities. The JWFC FMB/CAMB consists of senior technical, operational, program manager, and stakeholder representatives within the Joint Force Trainer Community. The board's responsibilities encompass merging and prioritizing technical training requirements. It apportions work to the RDT&E elements based on an assessment of where the work is best accomplished. The boards evaluate the efficacy of development efforts based on performance metrics and will vote on whether or not to continue the effort. This process will ensure the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

• Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?
• Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?
• Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow?

The Performance Improvement and Information Management Board is the strategic forum where the outcomes of performance relative to our external customers, stakeholders, and strategic stewardship of resources are the focus of discussion. Performance against the targets will be assessed and reported monthly, briefed quarterly to the FMB/CAMB, and rolled up into the JWFC Joint Training End-of-Fiscal Year Performance Report to ensure transparency and accountability.

Short Term MOEs:

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 761: *JOINT SIMULATION SYSTEMS (JSS)*

• Provide the JLVC Federation version 4.0 by 30 July 2010 to enable Services, COCOMS, Agencies and Coalition partners to deploy trained, capable, and interoperable joint forces.
o JLVC version 4.0 is delivered on time with less than ten priority one and two problem trouble reports.
o JLVC version 4.0 has an exercise availability rating of 95% .
• Provide the JLVC Federation version 4.1 by 30 Dec 2010 to enable Services, COCOMS, Agencies and Coalition partners to deploy trained, capable, and interoperable joint forces.
o JLVC version 4.1 is delivered on time with less than ten priority one and two problem trouble reports.
o JLVC version 4.1 has an exercise availability rating of 95%.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 764: *IRREGULAR WARFARE (IW)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
764: *IRREGULAR WARFARE (IW)*	3.700	17.772	11.515	-	11.515	14.953	16.171	17.309	17.571	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This research and development effort closes training gaps at the tactical and operational level and ensures the General Purpose Forces (GPF) receive relevant immersive, pre-deployment training equal to that provided to Special Forces. This effort researches, develops and integrates combat immersive human terrain/cueing/ profiling training, security force assistance training, counter threat finance training, virtual predator integration testing and training, asymmetric warfare improvised explosive device defeat training, improved mission rehearsal exercise after action review capability,, and distributed training technologies to provide irregular warfare training for the GPF. As part of a national effort, irregular warfare functional training research and development integrates and leverages academic, COCOM, Interagency, Joint, and Service initiatives and hybrid threat tactical and technical ground, aviation and maritime subject matter expertise to improve the combat performance of expeditionary forces in complex operating environments. Joint National Training Center irregular warfare research and development avoids duplicative efforts and achieves integration and synergetic training effects through coordination efforts within an irregular warfare community of interest in order to convert current operational practices, human, cultural and social science schools of thought, as well as state of the art virtual and constructive modeling and simulation capabilities to increase the combat proficiency and survival of jointforces across the full spectrum of warfare.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: P764 Irregular Warfare	3.700	17.772	11.515
Description: Description: This research and development effort closes training gaps at the tactical and operational level and ensures the General Purpose Forces (GPF) receive relevant immersive, pre-deployment training equal to that provided to Special Forces. This effort researches, develops and integrates combat immersive human terrain/cueing/profiling training, security force assistance training, counter threat finance training, virtual predator integration testing and training, asymmetric warfare improvised explosive device defeat training, improved mission rehearsal exercise after action review capability,, and distributed training technologies to provide irregular warfare training for the GPF. As part of a national effort, irregular warfare functional training research and development integrates and leverages academic, COCOM, Interagency, Joint, and Service initiatives and hybrid threat tactical and technical ground, aviation and maritime subject matter expertise to improve the combat performance of expeditionary forces in complex operating environments. Joint National Training Center irregular warfare research and development avoids duplicative efforts and achieves integration and synergetic training effects through coordination efforts within an irregular warfare community of interest in order to convert current operational practices, human, cultural and social science schools of thought, as well as state of the art virtual and constructive modeling and simulation capabilities to increase the combat proficiency and survival of joint forces across the full spectrum of warfare.			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 764: *IRREGULAR WARFARE (IW)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: • Conducted a web based IW modeling and simulation study to identify and create an intuitive IW search engine for scenario development. Study identified universal software formats and content that can be transferred into a standard software language in order to develop a collaborative IW modeling and simulation user community throughout the DoD and other governmental agencies. Created an easily used intuitive IW web based search process based upon 'high-level content object models' searchable across the domain of governmental and non-governmental systems on an array of digital formats . • Delivered a common IW modeling and simulation joint training environment to support GPF-SOF integration. The Joint Training Data Systems IW Repository significantly expands the existing Joint terrain generation capabilities within the Joint Training Environment. • Initiated an IW simulation environment that provides a gaming storyline and cueing/profiling models that replicate crowd behavior, insurgent and local population profiles and the associated effects of disrupting terrorist networks for incorporation into mission rehearsal gaming trainers. • Conducted initial research and development into a Virtual Mission Rehearsal Training Capability for SOFs. This capability will prepare SOFs for real-world rehearsal activities through the integration of live feeds. The system permits trainees to gain access to and input time-sensitive data whereby the tactical value necessitates supplementing or updating into planning and rehearsal outcomes. This allows small units and individuals to be prepared to conduct the full range of military operations in ground, air, and maritime environments. An integrated architectural strategy provides commanders the ability to make critical decisions before committing scarce resources. • Initiated an indigenous population study for inclusion into realistic training programs. Study includes cultural strategic communication and stems from a gap in current capabilities within the Joint Training Environment to provide training stimuli culture based on Joint Training Plan objectives. • Demonstrated and successfully assessed a fully immersive training environment (i.e. the Future Immersive Training Environment (FITE) Joint Technology Concept Demonstration (JTCD) for dismounted, close-combat missions/tasks, that emulate and reinforce complex tactical combat and human decision-making during contingency operations, for inclusion into Service training programs • Conducted an Adversarial Behavior Study to enhance and modify joint mission rehearsal/readiness exercises training scenarios.. Study provides an understanding of the decision making process of the adversary and elaborates on how the decision making process effects the leaders, individuals within the adversarial groups and their alliances. Findings influence both the planning and execution of the experiments and exercises through the development of the scenario, mission rehearsal and academic preparation.			
FY 2011 Plans:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
.•Designed and developed an integration and connectivity capability for an asymmetric warfare training capability that links virtual, constructive and various gaming Improvised Explosive Device (IED) Defeat simulators to a constructive simulation capability, aircraft and Intelligence, surveillance and Reconnaissance (ISR) simulators across various distributive networks. • Conducted initial research and development of Afghan Mission Network Training Federation for coalition and joint exercises, ensuring interoperability and development of C2 DOTMLPFs. • Initiated development and delivery of a Counter Threat Finance program prototype for inclusion in training programs and pre-deployment mission rehearsals. The development of Counter Threat Finance training program prototype provided flexible means for Department of Defense to facilitate future training among interagency, law enforcement, private sector, allies, and partner nations. • Provided a human/crowd reaction model to various stimuli (i.e a Human Terrain Model) and IW Scenario Library for collaborative joint use in Service pre-deployment mission rehearsals. • Initiated Development of an Enhanced Scenario Based Observation Tool prototype capability. This capability is designed to improve mission rehearsal exercise after action reporting capability in dynamic and complex operational training environments. • Initiated development of Security Force Assistance Special Operations Forces-General Purpose Forces integrated training program of instruction in support of Services home station training and Joint Task Force Headquarters pre-deployment exercises. • Develop a virtual predator broadcast integration capability at Nellis test and training range. System will provide integrated intelligence, surveillance and reconnaissance training to support joint training exercises and Services home station training when live air assets are unavailable. • Conducted research and development to develop three new scenarios for Special Operations Forces-General Purpose Forces irregular warfare staff training using the Small Group Scenario Trainer. • Continued development of Virtual Mission Rehearsal training capability for Special Operations Forces which will prepare them for real-world rehearsal activities. Expands on the software and hardware integration engine that allows multiple inputs into a near-real time gaming systems for mission rehearsal practice. Develop Joint Live-Constructive-Virtual integration capability for close air support and Joint Intelligence Surveillance and Reconnaissance (JISR) operations in a Counterinsurgency (COIN) environment through rapid scenario development and integrated support to joint rehearsal and training exercises. • Developed and integrated an Immersive Training capability into Service and Joint Training programs of record. Of particular note, implemented small unit system prototype laboratories focused on a reconfigurable and modular approach to software development which enables increased variable adjustment in order to respond to operational realities. • Developed and produced geospatial data products for US Army virtual simulation systems for use in Military Units on Urban Operations (MOUT) sites and Combat Training Centers to support mission rehearsal and sustainment training. • Conducted Joint Terminal Attack Controller: training effectiveness evaluation cost benefit assessment and study.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Conducted Stability Operations Information Cell study to develop joint training standards for irregular warfare operations information management training in support of Stability, Security, Transition and Reconstruction operations. • Demonstrated development of Joint Enabled Immersive Technology Insertion training capability. • Developed a rapid deployable joint, live, virtual, constructive irregular warfare aviation training capability for USAF units. • Continued development of the US Army's One Semi-Automated Forces (OneSAF) comprehensive simulation of extant counter improvised explosive device technologies including unclassified associated tactics, techniques and procedures, organization, equipment, and US Army Materiel Systems Analysis Activity validated physical models. ***FY 2012 Plans:*** •Conduct research and development in the creation of Strategic Communications and Information Operations training program. • Continue research and development of intelligence, surveillance and reconnaissance processing, exploitation, and dissemination joint training capabilities. • Continue analysis of COCOM IW training requirements to replicate the fluid operating environment. Analysis will concentrate on the identification of training gaps, adaptation to emerging requirements and incorporation into Service training and pre-mission rehearsal exercises. Goal is to mitigate key IW capability gaps identified by Quadrennial Defense Review (QDR), IW Joint Operating Concept (JOC), COCOM Integrated Priority List (IPLs), JFCOM Joint Training Plan (JTP) and other IW capability requirement documents. • Continue research and development to codify Special Operations Forces-General Purpose Forces training integrated 'best practices' into joint training. • Continue research and development of joint counterinsurgency training standards. • Continue research into IW areas in order to develop artificial intelligence and simulation models for live units to train with reactive virtual OPFOR and neutral civilian personnel through state of the art software technologies such as virtual worlds and other gaming technologies. • Continue Joint Live-Constructive-Virtual integration training capability for close air support and Joint intelligence, surveillance, reconnaissance operations in a counterinsurgency environment through rapid scenario development and integrated support to joint rehearsal and training exercises.			
Accomplishments/Planned Programs Subtotals	3.700	17.772	11.515

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0804767D8Z: *IW O&M Funding*	2.625	5.298	5.323		5.323	5.479	5.597	5.765	5.649	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0804767D8Z-: *IW Procurement Funding*	1.190	2.535	2.682		2.682	2.869	2.555	2.623	2.675	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

The USJFCOM Joint Warfighting Center (JWFC) Financial Management Board (FMB) and Contract Acquisition Management Board (CAMB) review all Research Development Test and Evaluation (RDT&E) equities. The JWFC FMB/CAMB consists of senior technical, operational, program manager, and stakeholder representatives within the Joint Force Trainer Community. The board's responsibilities encompass merging and prioritizing technical training requirements. It apportions work to the RDT&E elements based on an assessment of where the work is best accomplished. The boards evaluate the efficacy of development efforts based on performance metrics and will vote on whether or not to continue the effort. This process will ensure the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

• Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?
• Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?
• Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow?

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Short Term MOE:

• Provide a 10 % increase in capacity for the number of Soldiers, Sailors, Airmen, and Marines able to be trained in dismounted tactical training systems that replicate the IW operating environment.
• Increase the cognitive and temporal ratings of IW training environments by 10%, thereby increasing realism and reducing the number of close combat casualties sustained by US forces by ensuring that a Soldier, Sailor, Airmen, or Marine's next combat experience is no worse than his last training experience.
• Develop an initial web-based portal capable of displaying valuable information to support the enhancement of small units with a robust community of interest.
• Conduct three forums related to the human dimension, immersive training and joint capabilities at the small unit level.
• Contribute to DOD-wide immersive training related initiatives.
• Provide a Vision Narrative and a Campaign Plan.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	**PROJECT** 764: *IRREGULAR WARFARE (IW)*

• By 30 September 10 complete a Joint Combat Hunter program of instruction, and related materials, which focuses on human and environment profiling to be given to all Services and other partners for the enhancement of performance their small units/teams. Profiling skills will give each individual a better sense of his environment and pattern recognition to support identification of adversaries and Improvised Explosives Devices and support negotiations, cultural interactions.

Long Term MOEs:
• Provide a robust and efficient capability to conduct IW Joint Force training that address 90% of the required training objectives and a capacity to support all units that are preparing to deploy into harm's way.
• Provide a Joint roadmap of immersive IW training environment development that allows the Services to reduce duplicated efforts and enables them to discern logical touch points and leverage each other's work.
• Transition Combat Hunter to Services, Interagency, and Multinational partners as a primary program of record or related program applicable to the partner.
• Complete identification of authorities and roles and responsibilities for multinational consortium that results in sharing of immersive training capabilities.
• Expand the number of small unit partnerships by 50% or more.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 769: *JOINT KNOWLEDGE DEVELOPMENT & DISTRIBUTION CAPABILITY (JKDDC)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
769: *JOINT KNOWLEDGE DEVELOPMENT & DISTRIBUTION CAPABILITY (JKDDC)*	2.170	2.194	1.234	-	1.234	1.614	2.243	1.852	2.322	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Department's requirement is to develop a Joint Individual Training Toolkit of web enabled individual and small group training products and services. Products and services are developed in response to JKDDC stakeholder (COCOMs, Services, and Combat Support Agencies) prioritized training requirements. JKDDC supports a career-long joint learning continuum, joint professional military education and tailored common training standards to Service members for tasks that are jointly executed, resulting in trained, capable, and interoperable joint forces. This supports advanced technology development and enhancement for the Joint Advanced Distributive Learning training community. Emerging JKDDC advanced technology initiatives include the OSD(P&R) mandated collaboration with National Defense University (NDU) Federal Consortium for Virtual Worlds (FCVW) project focused on developing a secure virtual world satisfying web-based requirements for the Joint training community. Current JKDDC advanced technology initiatives principally include the Virtual Cultural Awareness Training (VCAT) web-based gaming and Small Group ScenarioTrainer (SGST), both accessible via the Joint Knowledge Online (JKO) Learning Management System. This capability facilitates the training and preparation of tens of thousands of military and civilian personnel deployment to combat theaters of operation prior to serving in their assigned Joint Task Force (JTF) billets. Specifically, VCAT supports one of the top three identified training shortcomings of returning warriors from United States Central Command (CENTCOM) based JTFs (cultural awareness training). JTF 'battle staffs' will be adequately trained, warriors as individuals and the staffs collectively, based on SGST development, overcoming existent training inadequacies for joint warriors. Significant training deficiencies will be mitigated in critical 'go to war'.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: P769 Joint Knowledge Development & Distribution Capability (JKDDC)	2.170	2.194	1.234
Description: This requirement is to develop a Joint Individual Training Toolkit of web enabled individual and small group training products and services. Products and services developed in response to JKDDC stakeholder (COCOMs, Services, and Combat Support Agencies) prioritized training requirements. JKDDC supports a career-long joint learning continuum, joint professional military education and tailored common training standards to Service members for tasks that are jointly executed, resulting in trained, capable, and interoperable joint forces. This supports advanced technology development and enhancement for the Joint Advanced Distributive Learning training community. JKDDC advanced technology initiatives principally include the Virtual Cultural Awareness Training (VCAT) web-based gaming and Small Group Scenario Trainer (SGST), both accessible via the Joint Knowledge Online (JKO) Learning Management System. This capability facilitates the training and preparation of tens of thousands of military and civilian personnel deployed to combat theaters of operation prior to serving in their assigned Joint Task			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 769: *JOINT KNOWLEDGE DEVELOPMENT & DISTRIBUTION CAPABILITY (JKDDC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

Force (JTF) billets. Specifically, VCAT supports one of the top three identified training shortcomings of returning warriors from United States Central Command (CENTCOM) based JTF cultural awareness training. JTF 'battle staffs' will be adequately trained warriors, as individuals and the staffs collectively based on SGST development and overcoming existent training inadequacies for joint warriors. Significant training deficiencies will be mitigated in critical 'go to war' tasks.

FY 2010 Accomplishments:

• Developed VCAT web-based game version 2 (focused on Northern Africa AOR), originally developed with JFCOM Training Capability Analysis of Alternatives RDT&E funding beginning in FY08. Version 2 of this web-based game enhanced joint warrior provided recommendations from version 1 (focused on Horn of Africa AOR), expanded the number of training audience areas of responsibility (AOR) environments to two, integrated Defense Language Institute (DLI) approved language training content, while simultaneously demonstrating an improved capability to deliver training via an innovative training technique. The training readiness and tactical proficiency of thousands of individual augmentees deploying to Central Command's AOR improved via this JKO provided training enabling toolset.

• developed SGST version 2, a small group training capability focusing on improving the training readiness of individuals and small joint headquarters staffs has begun. Version 1 prototype was developed with JFCOM Training Capability Analysis of Alternatives RDT&E funding beginning in FY08. Version 2 will enhance joint warrior provided recommendations from version 1, and target development of six additional SGSTs use cases for representative JTF staffs, all designed to complement existing COCOM mission rehearsal exercises in preparation for deployment to combat theaters of operation. Thousands of joint, interagency, intergovernmental and multinational participants were better trained as individuals and collectively as small teams prior to and during deployment in hostile environments.

• Provided direct customized instruction through intelligent tutor/avatars based advanced technologies software embedded in learning stimulation to students (without the intervention of human beings) via web-based training courses. Intent was to collaboratively enhance six JKO web-based training courses with the Advanced Distributed Learning Co-Lab by creating instantiations of adaptable intelligent tutor/avatar enabled courses delivered by JKO. Learning return on investment is significant as published academic research stated that learning retention, effectiveness and efficiency can increase by as much as 80% via intelligent tutor/avatar embedded courseware.

FY 2011 Plans:

• Developed VCAT web-based game version 3 (focused on Afghanistan AOR), originally developed with JFCOM Training Capability Analysis of Alternatives RDT&E funding beginning in FY08. Version 3 of this web-based game enhanced joint warrior provided recommendations from version 1 (focused on Horn of Africa AOR) and version 2 (focused on Northern Africa AOR), expanded the number of training audience AOR environments to three, integrated DLI approved language training content, while simultaneously demonstrating an improved capability to deliver training via an innovative training technique. The training

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 769: *JOINT KNOWLEDGE DEVELOPMENT & DISTRIBUTION CAPABILITY (JKDDC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
readiness and tactical proficiency of thousands of individual augmentees deploying to Central Command's AOR improved via this JKO provided training enabling toolset. • Operationalized training stimulation by developing SGST version 2, a small group training capability focused on improving the training readiness of individuals and small joint headquarters staffs. Version 1 prototype was developed with JFCOM Training Capability Analysis of Alternatives RDT&E funding beginning in FY08. Version 2 enhanced joint warrior provided recommendations from version 1, and target development of six additional SGSTs use cases for representative JTF staffs, all designed to complement existing Combatant Command mission rehearsal exercises in preparation for deployment to combat theaters of operation. Thousands of joint, interagency, intergovernmental and multinational participants were better trained as individuals and collectively as small teams prior to and during deployment in hostile environments. • Provided direct customized instruction through intelligent tutor/avatars based advanced technologies software embedded in learning stimulation to students (without the intervention of human beings) via web-based training courses. Intent was to collaboratively enhance twelve JKO web-based training courses with the Advanced Distributed Learning Co-Lab by creating instantiations of adaptable intelligent tutor/avatar enabled courses delivered by JKO. Learning return on investment is significant as published academic research stated that learning retention, effectiveness and efficiency can increase by as much as 80% via intelligent tutor/avatar embedded courseware.			
FY 2012 Plans: • Establish a plan to develop a JKO Online Virtual Immersive Training Environment (JOVITE) in concert with NDU FCVW project focused on joint individuals and small groups pre-deployment and pre-mission rehearsal exercise training. Plan will include a curriculum to guide individuals on required and operational training within the JOVITE focused on Virtual Language and Culture Scenario Training and the Virtual Staff Skills Validation Toolkit. The JOVITE will serve as the culminating event system that will provide Commanders the capability to assess whether or not individuals and small groups within a CJTF Staff are prepared to execute their primary mission within a CJTF or Joint Headquarters Staff. • Introduce SGST version 3, developed to continue achieving joint warrior directed training requirements and improve training readiness of individuals and small joint headquarters staffs. Version 3 will enhance joint warrior provided recommendations from versions 1 and 2, and target development of four additional SGSTs use cases for representative JTF staffs, all designed to complement existing Combatant Command mission rehearsal exercises in preparation for deployment to combat theaters of operation. Thousands of joint, interagency, intergovernmental and multinational participants will be better trained as individuals and collectively as small teams prior to and during deployment in hostile environments.			
Accomplishments/Planned Programs Subtotals	2.170	2.194	1.234

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 769: *JOINT KNOWLEDGE DEVELOPMENT & DISTRIBUTION CAPABILITY (JKDDC)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0804767D8Z: *JKDDC O&M Funding*	6.840	6.648	6.726		6.726	6.841	6.956	7.120	7.262	Continuing	Continuing
• 0804767D8Z-: *JKDDC Procurement Funding*	0.270	0.279	0.292		0.292	0.309	0.274	0.282	0.288	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

.The USJFCOM Joint Warfighting Center (JWFC) Financial Management Board (FMB) and Contract Acquisition Management Board (CAMB) review all Research Development Test and Evaluation (RDT&E) equities. The JWFC FMB/CAMB consists of senior technical, operational, program manager, and stakeholder representatives within the Joint Force Trainer Community. The board's responsibilities encompass merging and prioritizing technical training requirements. It apportions work to the RDT&E elements based on an assessment of where the work is best accomplished. The boards evaluate the efficacy of development efforts based on performance metrics and will vote on whether or not to continue the effort. This process will ensure the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

• Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?
• Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?
• Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow?

The Performance Improvement and Information Management Board is the strategic forum where the outcomes of performance relative to our external customers, stakeholders, and strategic stewardship of resources are the focus of discussion. Performance against the targets will be assessed and reported monthly, briefed quarterly to the FMB/CAMB, and rolled up into the JWFC Joint Training End-of-Fiscal Year Performance Report to ensure transparency and accountability.

Short Term MOEs:

• Augment the ability to provide cultural context training for COCOM's Joint Mission Essential Task functional areas by one geographic area of responsibility, and two mission areas per year.
• Provide small group training focused on Joint Exercise Life Cycle specified mission areas for pre-requisite in exercise augmentation, or post exercise remediation training for three exercise response cells per year.
• Add context sensitive remediation to five existing Joint Distributed Learning courses per year.

Long Term MOEs:

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	**PROJECT** 769: *JOINT KNOWLEDGE DEVELOPMENT & DISTRIBUTION CAPABILITY (JKDDC)*

• Provide a systematic, steady-state process for integrating cultural context, small group training, and intelligent remediation requirements into the Joint Training System Phase I of the initiative, resulting in improved training and readiness for the warfighter.
• Provide cost model for evaluating level of effort, additional conditions and standards for cultural context, small group training, and intelligent remediation to Joint Mission Essential Task training solutions for the Joint Training System Phase II, resulting in improved readiness, while providing improved training to the warfighter, will be in place by year five of the initiative.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 760: *Congressional Transactions*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
760: *Congressional Transactions*	6.389	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Congressional transactions; COCOM Exercise Engagement & Training Transformation Appn Conference $6.4M less Section 8025(f) (-.161), less Section 8104 Economic Assumptions (-.170).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: P760 Congressional Transactions	6.389	-	-
FY 2010 Accomplishments: Not applicable			
Accomplishments/Planned Programs Subtotals	6.389	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 770: *U.S. Forces Korea Training and Exercise Support*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
770: *U.S. Forces Korea Training and Exercise Support*	-	10.211	7.504	-	7.504	7.436	4.398	1.442	1.363	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

USFK requires an updated Joint and Combined Training Environment in order to complete their transition by 2012. USFK's current federation of models, including the overarching Joint Training Transformation Initiative Korea is used only at USFK, no longer has Service or JWFC support, does not meet Coalition interoperability requirements, and cannot fully utilize the Joint Live Virtual Constructive (JLVC) Federation's capabilities. USJFCOM will initially conduct technical planning and individual simulation software development in order to complete the detailed technical planning that enables individual simulations to develop their necessary software. USJFCOM, in collaboration with USFK and appropriate Republic of Korea agencies, will then ingrate War Simulation (WARSIM) into the JLVC Training Federation in order to field a functioning JLVC federation to USFK. This new training environment will support the extensive ground order of battle required to accurately simulate operations on the Korean Peninsula. It also maximizes existing JLVC training standards and investments, and fully leverages Service training capabilities and roadmaps. This solution will provide the initial effort to link coalition training architectures into the JLVC as well. It will also promotes the Joint Training Environment vision and goals as described in the draft DoDI 1322.xx and 1322.yy and implement selected pieces of recommendations identified in the LVC report, the Flagship Study.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: USFK Training & Exercise	-	10.211	7.504
Description: This program will develop a Modeling & Simulation solution that is a jointly accredited, supported, and funded federation of constructive simulations capable of satisfying all joint exercise training requirements in the Korean Theater of Operations and that is interoperable with the Republic of Korea developed Korean Simulation System. This solution will be capable of interoperating in a common battlespace that realistically represents the operating environment to all levels of training audiences, tactical to strategic, in Korean theater exercises. While supporting USFK's specific requirements, this solution will contain enhancements that will benefit all users of the JLVC. ***FY 2011 Plans:*** • Integrated initial Integrated Air and Missile Defense Modeling & Simulation (M&S) training capability within M&S training capability for USFK. • Initiated WARSIM Capabilities assessment prior to Joint Live Virtual Constructive Integration. • Began initial integration of Army's ground model as part of USFK's M&S Training capability. • Conducted technical solutions analysis of USFK Maritime M&S training capability			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 770: *U.S. Forces Korea Training and Exercise Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Researched and analyzed WARSIM Data Initialization requirements. • Conducted WARSIM Scalability Experiment to meet USFK ground/maneuver training requirements. • Began initial integration of "All Things Missile" Theater Missile Defense M&S Training capabilities in support of USFK. ***FY 2012 Plans:*** • Integrate Air Force model with WARSIM as a part of USFK's M&S training capability. • Complete USFK technical planning to include development of detailed implementation plan. • Develop USFK network evaluation and implementation plan and timeline. • Initial software development for JLVC simulations. • Develop Joint Logistics M&S training capability.			
Accomplishments/Planned Programs Subtotals	-	10.211	7.504

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0804767D8Z: *U.S. Forces Korea Training&Exercise Proc*		0.498	1.193		1.193	1.193	0.298	0.297	0.304	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

The USJFCOM Joint Warfighting Center (JWFC) Financial Management Board (FMB) and Contract Acquisition Management Board (CAMB) review all Research Development Test and Evaluation (RDT&E) equities. The JWFC FMB/CAMB consists of senior technical, operational, program manager, and stakeholder representatives within the Joint Force Trainer Community. The board's responsibilities encompass merging and prioritizing technical training requirements. It apportions work to the RDT&E elements based on an assessment of where the work is best accomplished. The boards evaluate the efficacy of development efforts based on performance metrics and will vote on whether or not to continue the effort. This process will ensure the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

• Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?
• Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?
• Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?
• Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	**PROJECT** 770: *U.S. Forces Korea Training and Exercise Support*

The Performance Improvement and Information Management Board is the strategic forum where the outcomes of performance relative to our external customers, stakeholders, and strategic stewardship of resources are the focus of discussion. Performance against the targets will be assessed and reported monthly, briefed quarterly to the FMB/CAMB, and rolled up into the JWFC Joint Training End-of-Fiscal Year Performance Report to ensure transparency and accountability.

Short Term MOEs:
• Develop software for JLVC simulations with initial integration of the Army's Warfare Simulation model (WARSIM), along with a validated approach for Cross Domain Information Sharing technologies for the joint training enterprise, to provide common ground truth and a realistic warfighter training environment.

Long Term MOEs:
• Integrate War simulation into the JLVC to the level of conducting basic direct and indirect fire integration with other federates.
• To provide a training capability for Korean Simulation center to operate within the 5.0/5.1 upgrade of the JLVC.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 754: *Immersive Simulation*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
754: *Immersive Simulation*	-	33.315	21.868	-	21.868	32.605	14.862	17.240	16.950	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

As part of the Department of Defense's shift to building IW capability and recognizing the percentage of casualties taken in close combat, RMD 700 increased funding through Undersecretaries of Defense, Personnel and Readiness to the services and USJFCOM for urgent development of infantry immersive training simulators as part of a broader effort for small unit excellence. While highlighted by the need to adapt simulation now to IW demands, the value of enhanced infantry small unit immersive simulation will contribute to small unit proficiency and survival across the range of military operations, from irregular to conventional.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Immersive Simulation	-	33.315	21.868
Description: Accelerate fielding of immersive training systems and capabilities inclusive of integrated hardware with virtual enhancements, modular systems and video capture within individual and collective tracking systems. Accelerate development of autonomous behavior capabilities through development of Opposing Force and Blue Force Behavior, Common SAF in Synthetic Environment, and enhancement of current software (Virtual Battlespace 2). These expenditures will improve 119 behaviors models, establish 50 new entities, 50 new visual models/year, 50 BLUEFOR Behaviors, improve Avatar capability and enhance interactions. ***FY 2011 Plans:*** • Develop a strategic design and engineering plan to build two close combat/infantry immersive simulators. • Design and test an evaluation plan to ensure efficacy of the effort.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 754: *Immersive Simulation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Develop a rapid prototyping document describing fundamentals and outlining coordination of this close combat/infantry immersive training simulator, to ensure DoD-wide awareness. • Develop a facility plan and acquire space for a fully enclosed training facility area that accommodates platoon/squad elements and adapts to other small units in future environments, with additional working space for control/operations functions, classroom, after action and rehearsal capacity, and storage/admin space. • Develop innovative training approaches, strategies, and methodologies for essential personnel, logistics and support structure to meet training requirements and instructions. • Develop a simulator capable of replicating joint capabilities, Afghanistan theater C2 architecture and data/voice links to other select simulators and facilities. • Achieve realistic sounds and visual cues replicating ambient noise and visual stimulus. • Develop an initial capability that advances two and three dimensional displays, capable of creating realistic projected virtual entities with Afghanistan cultural and language abilities; fully integrated with select role players and, realistic weapon's effects during force on force actions. • Develop and build an initial prototype individual tracking of trainees/role players, weapons locations and trainee head orientation. The after action report (AAR) system will use and integrate scenario development or mission rehearsal tools in order to automate data capture of significant training decision events. • Develop sophisticated measurement and assessment systems that records and plays back each trainee, role player, and simulated entities movements, orientation, and communications. • Develop an initial prototype responsive integrating scenario generation software tool, linked to Mission Essential Task List based training standards, cognitive decision requirement standards, and innovative instructional tools. • Develop a realistic static and reconfigurable training structure, to include multi-story structures, and an ability to support future power and infrastructure upgrades. • Develop an initial prototype simulator capable of creating limited environmental conditions (wind, heat & cold) and designed to accept future environmental capabilities, such as humidity and rain. ***FY 2012 Plans:*** • Purchase WARSIM Test Suite. • Enhance technical planning to include development of detailed implementation plan. • Research WARSIM Data Initialization requirements. • Conduct WARSIM Scalability Experiment. • Develop network evaluation and implementation plan and timeline. • Initial software development for JLVC simulations.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	**PROJECT** 754: *Immersive Simulation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Provide cross domain information sharing solution between USFK and ROK forces.			
Accomplishments/Planned Programs Subtotals	-	33.315	21.868

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

The funds allocated for Immersive Simulation are designed to speed delivery of capability for small teams for training. Use of the funds will be audited against the metric of how quickly improvements for immersive simulation are delivered. These metrics will be evaluated by a panel of flag and general officers on a quarterly basis. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

. Time - Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?

. Cost - Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?

. Realism - Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?

. Fidelity - Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow?

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 701: *Air Force JNTC*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
701: *Air Force JNTC*	-	-	2.408	-	2.408	2.023	2.286	2.689	2.765	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Supports the SECDEF's Transformation in Training/Joint National Training Capability (JNTC). Develops capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Using a scientific and phased approach and focusing on modeling air and space capabilities, researches new technologies and methods that provide a crucial technology-based foundation supporting all JNTC operations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: AF JNTC	-	-	2.408
Description: Supports the SECDEF's Transformation in Training/Joint National Training Capability (JNTC). Develops capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Using a scientific and phased approach and focusing on modeling air and space capabilities, researches new technologies and methods that provide a crucial technology-based foundation supporting all JNTC operations. ***FY 2012 Plans:*** AIR WARFARE SIMULATION (AWSIM) UPGRADES: Continue Air Force Modeling & Simulation Tool Kit (AFMSTT) Scenario and Terrain module development. BEGIN/CONTINUE MULTI-LEVEL SECURITY: Live Multi-level Security for Virtual-Constructive BEGIN/CONTINUE CONCEPT OF OPERATIONS FOR SPACE Distributed Mission Operations Center (DMOC): Continue space effects and GPS jamming integration into JNTC			
Accomplishments/Planned Programs Subtotals	-	-	2.408

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	**PROJECT** 701: *Air Force JNTC*

E. Performance Metrics

The USJFCOM Joint Warfighting Center (JWFC) Financial Management Board (FMB) and Contract Acquisition Management Board (CAMB) review all Research Development Test and Evaluation (RDT&E) equities. The JWFC FMB/CAMB consists of senior technical, operational, program manager, and stakeholder representatives within the Joint Force Trainer Community. The board's responsibilities encompass merging and prioritizing technical training requirements. It apportions work to the RDT&E elements based on an assessment of where the work is best accomplished. The boards evaluate the efficacy of development efforts based on performance metrics and will vote on whether or not to continue the effort. This process will ensure the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

- Time – Will the effort enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow?
- Cost – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?
- Realism – Will the effort enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow?
- Fidelity – Will the effort enable the Joint Force Trainer to create more detailed capabilities in the training environment than current capabilities allow?

The Performance Improvement and Information Management Board is the strategic forum where the outcomes of performance relative to our external customers, stakeholders, and strategic stewardship of resources are the focus of discussion. Performance against the targets will be assessed and reported monthly, briefed quarterly to the FMB/CAMB, and rolled up into the JWFC Joint Training End-of-Fiscal Year Performance Report to ensure transparency and accountability.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	PROJECT 772: *Navy JNTC*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
772: *Navy JNTC*	-	-	3.611	-	3.611	3.947	4.141	4.316	4.625	Continuing	Continuing
Quantity of RDT&E Articles											

Note

Resource Management Decision (RMD) No: 700, Issue No: INV-5438, Issue Title: Transfer of Navy Joint Training Program. Defers the transfer of Navy Joint Training Research, Development, Test & Evaluation funds to the Combatant Commander's Exercise Engagement & Training Transformation (CE2T2) account until the Joint Forces Command is disestablished. The OUSD (P&R) is to present a more informed proposal for the CE2T2 Program realignments to the OUSD(C) no later than June 30, 2011. Several Combatant Commander Exercise Engagement & Training Transformation (CE2T2) Issue Papers were submitted during this Program/Budget Review Cycle containing elements related to the Joint Forces Command (JFCOM), and therefore in light of the JFCOM disestablishment consideration of these issue papers are deferred until June 30, 2011. This Issue Paper proposes that the Navy Joint Training Research, Development, Test & Evaluation efforts are more appropriately budgeted in CE2T2 program to continue the consolidation of the Department's Joint training funds.

A. Mission Description and Budget Item Justification

Supports the SECDEF's Transformation in Training/Joint National Training Capability (JNTC). Develops unique maritime capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Using a scientific and phased approach and focusing on modeling maritime, littoral and bathometric capabilities, researches new technologies and methods that provide a crucial technology-based foundation supporting all JNTC operations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Navy Joint National Training Center	-	-	3.611
Description: Supports the SECDEF's Transformation in Training/Joint National Training Capability (JNTC). Develops unique maritime capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Using a scientific and phased approach and focusing on modeling maritime, littoral and bathometric capabilities, researches new technologies and methods that provide a crucial technology-based foundation supporting all JNTC operations. ***FY 2012 Plans:*** The Navy continues to develop joint training technologies that will play a crucial role in its ability to address current and future joint operational training requirements. Navy program activities include conducting research, development, test and evaluation and cross-service architecture certification on Navy capable systems, developing architectures and roadmaps to ensure that service instrumentation follows a common standard, and researching and assessing Navy mission rehearsal, Joint Semi-Automated Forces (JSAF), JNTC JLVC FOM Interoperability's.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	**PROJECT** 772: *Navy JNTC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The Navy will further develop capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Using a scientific and phased approach, Navy will leverage and research new technologies and methods, based upon focused joint operational training requirements, that provide a crucial technology-based foundation supporting all current and "to be" Navy joint training capabilities. Available commercial-off-the-shelf (COTS) and government -off-the-shelf (GOTS) networked information technologies and collaborative planning tools will be leveraged to provide improved net-centric joint training capability. Navy will lead the collaboration process to identify, collect and validate the requirements in order to design and develop the modeling and simulation capabilities that address the shortfalls in current abilities to support Joint Task training to standards. The Navy JLVC FOM development program is the primary means of providing a persistent and interoperable network among the Navy, Joint and Coalition federation components. The Navy JNTC RDT&E Program directly supports the Unified Command Plan (UCP) series and is aligned with the DoD Information Operations (IO) Roadmap.			
Accomplishments/Planned Programs Subtotals	-	-	3.611

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

• Joint Semi-Automated Forces (JSAF) will have one software release to include documentation; will design and implement upgrades to JSAF consistent with approved requirements and CRs and document the effects of JSAF capabilities (robustness) and stability. Will design, implement, test, and integrate JSAF enhancements in accordance with requirements.

• Navy Training FOM (NTF) will have one release to include applicable documentation updates for the Guidance, Rational, and Interoperability Manual (GRIM) and Federation Agreement document (FAD). Will implement JSAF capability enhancements to support evolving joint and Coalition training requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0804767D8Z: *COCOM Exercise Engagement and Training Transformation (CE2T2)*	**PROJECT** 772: *Navy JNTC*

• Facilitate integration by providing dedicated support to the effort, improving the quality of participation and documentation of Navy efforts in the JNTC. Refine and mature the Navy Training Federation Object Model (NTF), it is improving interoperability and integration with other services and the Joint community. Provides a standardized Federation Object Model (FOM) for integration across the Navy training simulations.

• Current Joint Live-Virtual-Constructive (JLVC) and other federation simulation distribution is accomplished by tying simulation data to multicast groups. This is neither a scalable solution nor is it an effective one as federates are not able to publish and subscribe with fine enough precision. The Simulation Aware Software Router will address this shortcoming, and additionally provide a flexible solution for federating heterogeneous networks and on-the-wire protocols without forcing all federates onto a single, uniform, lowest common denominator solution for each training event. Ultimately, a simulation aware router will allow simulation users to optimize the network for both simulation scalable traffic and for voice and Command, Control, Communications, (Computers), Intelligence (C4I) traffic.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0909999D8Z: *Financing for Cancelled Account Adjustments*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	0.814	-	-	-	-	-	-	-	-	Continuing	Continuing
546: *Financing for Cancelled Account Adjustments*	0.814	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Not applicable for this item

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	0.814	-	-	-	-
Total Adjustments	0.814	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	0.814	-			
• SBIR/STTR Transfer	-	-			

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Not applicable for this item.	0.814	-	-
FY 2010 Accomplishments: Funding used to pay delinquent bills for cancelled accounts that are no longer active.			
Accomplishments/Planned Programs Subtotals	0.814	-	-

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0909999D8Z: *Financing for Cancelled Account Adjustments*

F. Performance Metrics

Not applicable for this item.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	52.667	44.139	29.880	-	29.880	28.470	29.037	29.643	30.181	Continuing	Continuing
P818: *Joint Integration & Interoperability*	52.667	44.139	29.880	-	29.880	28.470	29.037	29.643	30.181	Continuing	Continuing

Note

At the time of this submission, the Department of Defense is developing the Joint program strategy and objectives for FY 12 and beyond. This is a result of the decision to disestablish U.S. Joint Forces Command, and the Secretary of Defense's efficiency initiatives. Any additional changes for FY12 projects and objectives will be provided when available.

A. Mission Description and Budget Item Justification

The Joint Integration & Interoperability (JI&I) Program Element underwrites the Department's core joint Command and Control (C2) efforts for military needs development and validation, for development of associated Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF), and for operational assessment of materiel solutions proposed and delivered by the Defense acquisition enterprise. Funds from the JI&I Program are used to address joint capabilities including, but not limited to operational through tactical level joint integration of the following capabilities: Common Operational and Tactical Pictures; Combat Identification; Situational Awareness; Adaptive Mission Planning and Rehearsal; Interoperability among Service/ Agency intelligence systems; Interoperable Joint Fires, Maneuver, and Intelligence; and Integrated Joint Battle Management Command and Control. Activities funded by the JI&I Program aim to:

-- Identify, and/or develop mission capable solutions for COCOM interoperability and integration capability shortfalls with emphasis on non-materiel elements;
-- Assess operational suitability and sufficiency of materiel solutions identified by the Defense acquisition enterprise in response to validated joint C2 needs;
-- Provide Combatant Commanders with interoperable combat identification and situational awareness capabilities among United States Interagencies, and Allied and Coalition Forces in support of Overseas Contingency Operations;
-- Develop joint requirements supporting C2-intensive joint missions such as Joint Close Air Support and Joint Fires;
-- Develop joint integrated architectures that guide service capability mapping to achieve joint interoperability;
-- Establish fundamental joint data standards and cross domain solutions to facilitate future system interoperability and integration; and,
-- Undertake other activities to resolve emergent operational and tactical needs associated with joint C2.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	46.214	44.139	48.745	-	48.745
Current President's Budget	52.667	44.139	29.880	-	29.880
Total Adjustments	6.453	-	-18.865	-	-18.865
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.500	-			
• SBIR/STTR Transfer	-0.820	-			
• Other Program Adjustments	7.773	-	-	-	-
• Defense Efficiency - JFCOM Task Force	-	-	-17.481	-	-17.481
• Defense Efficiency - Baseline Review	-	-	-0.549	-	-0.549
• Defense Efficiency - Reports, Studies, Boards, and Commisssions	-	-	-0.778	-	-0.778
• Economic Assumptions	-	-	-0.057	-	-0.057

Change Summary Explanation

Defense Efficiency – JFCOM Task Force. As part of the Department of Defense reform agenda, a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions was performed. This is a result of the decision to disestablish U.S. Joint Forces Command, and the Secretary of Defense's efficiency initiatives. Any additional changes for FY12 projects and objectives will be provided when available.

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P818: *Joint Integration & Interoperability*	52.667	44.139	29.880	-	29.880	28.470	29.037	29.643	30.181	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Joint Integration and Interoperability Program (JI&I) funds efforts to identify critical characteristics of joint military capabilities and synchronize Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) capability elements into a coherent package for employment by joint commanders.

The JI&I Program provide resources for a wide range of efforts to define, refine, and deploy integrated joint capabilities. JI&I-funded endeavors aim to improve US and coalition capabilities to conduct coordinated operations. Necessarily, JI&I-funded projects most frequently address Command & Control (C2) and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) - the capstone capabilities for integrating disparate elements of military force for joint and coalition operations. The JI&I Program supports tasks and projects associated with integration & interoperability of the C2 Capability Portfolio including coordination of C2 operational architectures, standards, and policies. Likewise, JI&I partially funds integration activities associated with the C2 Capability Integration Board (C2CIB), a senior council co-led by US Strategic Command (USSTRATCOM) and ASD Networks & Information Integration (NII). The C2CIB integrates oversight of C2 Capability Portfolio Management (CPM) and the Net-Centric CPM.

The JI&I Program deliver outcomes conforming to joint integration missions:
-- In concert with the separately funded Joint Systems Integration Command (JSIC) and Joint Fires Integration Interoperability Team (JFIIT), JI&I resources investigate joint C2/C4ISR shortfalls and ascertain characteristics of DOTMLPF remedies to meet mission requirements. The remedies are then pursued through partnerships with Component force development authorities and acquisition sponsors.
-- Consistent with the role as operational sponsor for joint C2, JI&I underwrites Joint Combat Capability Developer (JCCD) activities compiling operational requirements for C2/C4ISR capability development and integrated testing.
-- Delivers assessment and recommendations for improvement of interoperable Combat Identification (CID) and Situational Awareness (SA) capabilities among United States forces, interagency organizations, and allied/coalition forces;
-- Establishes joint data standards and cross domain solutions to facilitate future system interoperability and integration.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint C2 Capability Development and Intergration	12.149	6.721	1.401
Description: Primary objective is development, oversight, and execution of the DoD C2 Strategic and Implementation Plan objectives. Incremental delivery of "born joint" capabilities are synchronized through the C2 Capability Portfolio Management (CPM) process, enhancing the joint war fighting capabilities of the combatant commanders. The JI&I program, in coordination			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

with the Defense acquisition enterprise, assesses the effectiveness of the C2 portfolio, identifies emerging capability gaps, and formulates recommendations to address those gaps through CPM processes.

To hasten delivery of C2 capabilities across the full spectrum of warfare, the C2 CPM process examined Joint Test and Evaluation (T&E) requirements necessary to support a more efficient acquisition process. The CPM process formulated a Net Enabled Universal Joint Task (NE-UJT) Working Group to refine the quantitative aspects of the Net Ready Key Performance Parameters (NR-KPP) as C2 attributes measurable through T&E. Staff members serving CPM processes participated in exercises including Joint Task Force Exercise (JTFEX), Empire Challenge, and Bold Quest to identify C2 attributes that were or could have been collected to support joint C2 operational assessments. These T&E support efforts spawned the Joint Systems Integration/ Interoperability Laboratory (JSIIL) for evaluation of operational and tactical C2 capabilities both fielded and under development.

The primary outputs and efficiencies pursued through the C2 CPM effort funded by the JI&I program element include:
1) Improved, integrated, interoperable, and networked joint force;
2) Reduction in duplicative C2 systems/programs across the DoD portfolio;
3) Improved portfolio decisions and recommendations regarding investment strategies and development efforts; and,
4) Associated benefits to warfighter efficiency and effectiveness.

Specific tasks undertaken in support of these results include:
- Documenting and validating needs for Cooperative Target Identification to enhance combat effectiveness, reduce fratricide, increase availability of close air support for troops under fire, provide more effective coordination of air assets, increase weapon accuracy and support time sensitive targeting;
- Documenting Authoritative Data Sources (ADS) with “secure transparency” timelines to provide a common data reference set for C2 interoperability;
- Developing Data Standards with breadth of application through Integrating architectures;
- Coordinating strategies to transition from legacy, platform-centric systems to a net-enabled environment focused on plug-and play interoperability and application-independent data flow.

FY 2010 Accomplishments:
Led Joint C2 Capability sustainment, synchronization and migration of C2 functionality to next-generation objective C2 capability, while ensuring no degradation to fielded Global Command and Control System/Family of Systems (GCCS FoS) and other C2 capabilities. Supported OSD-directed study of GCCS Family of Systems funding needs to inform POM 12 deliberations. Led efforts by Services and Agencies to identify Authoritative Data Sources and plan for FY12 implementation costs of a C2 Core standard. In partnership with Combatant Commands, Services and Agencies (C/S/A) developed Fiscal Year 2012 resourcing

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
strategies for an Adaptive Planning and Execution (APEX) support capability, including required funding, identification of overlapping efforts and gaps, and recommendations for coordination / synchronization of APEX tools and functionality. In partnership with the Military Services, identified and developed Joint Mission Threads (JMTs) for use in Limited Operational Assessment (LOA) events, and to exercise and refine the Joint Systems Integration/ Interoperability Laboratory (JSIIL) Concept of Operations (CONOPS) and Standing Operating Procedure (SOP). ***FY 2011 Plans:*** Achieve JSIIL Initial Operating Capability (IOC) to establish a persistent joint assessment and certification environment for testing. Ongoing support to JC2 Capability Assessment of Alternatives (AoA). Continue work with Services regarding Authoritative Data Source exposure schedule. Continue development of Joint Mission Threads (JMTs). Conduct analysis to determine DOTMLPF capability development priorities across the C2 portfolio. Use Mission Analysis and validated COCOM Senior Warfighter Forum (SWarF) inputs, to provide POM 13 recommendations and inform investment and trade-off recommendations for Fiscal Year 2013 resourcing deliberations. ***FY 2012 Plans:*** Provide DoD Components with prioritized C2 capability investment recommendations across the defense enterprise (both materiel and non-materiel) to minimize risks associated with C2 capability shortfalls. Evaluate the current mix of C2 capabilities against COCOM validated gaps and requirements, to identify the best mix of capabilities with proposed changes in policies, standards and training. Support implementation of senior leader decisions regarding sustainment, synchronization and modernization of the GCCS FoS and Joint C2 AoA. Continue work with the Services regarding Authoritative Data Source exposure schedule. Continue the development and operation of the JSIIL to provide a persistent joint environment for test and assessment to address COCOM issues in operational assessments/venues. Conduct studies, analyses and operational assessments for the development of C2 portfolio capability solutions necessary to satisfy warfighting requirements and inform Fiscal Year 2014 resourcing deliberations.			
Title: Joint Combat Capability Developer (JCCD) ***Description:*** The primary objective for this effort is to meet joint warfighter command and control needs (C2) through a flexible and responsive capability-needs development and oversight process across the full spectrum of C2 development; strategic-to-tactical. The JCCD identifies joint C2 requirements/capability needs and essential Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities – Policy (DOTMLPF-P) attributes to support development and fielding of agile C2 solutions in response to validated warfighter needs. The JCCD serves as DoD's operational sponsor and Warfighter advocate for Global Command and Control System-Joint (GCCS-J) capabilities and Joint C2 capabilities, and as joint functional sponsor to develop requirements for the Global Theater Security Cooperation Management Information System (G-TSCMIS). It also serves as DoD's operational sponsor for Multi-National and Mission Partner (MNMP) requirements development, including Unclassified Information Sharing capabilities. The JCCD employs a formalized C2 governance and management process codified in CJCSI/	11.592	6.649	5.528

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

M 3265.01, 6285.01, and JROC-approved Charter to collect, collate, validate, prioritize, and sequence the many C2 stakeholder requirements and capability needs, and ensures Service and agency development efforts are synchronized. As a key leader of C2 governance and management processes, the JCCD co-chairs five C2 working groups with OSD, Joint Staff, Services, Combatant Command, and Agency participation to evaluate the health of current C2 capabilities. Further, it co-leads an 06-level JCCD Council of Colonels to identify and address C2 issues, and recommend solutions to senior level C2 forums up through the Vice Chairman, Joint Chiefs of Staff. To synchronize C2 development efforts, the JCCD leads semi-annual Plan Build conferences composed of Service and Agency materiel developers to prioritize and coordinate C2 development efforts by fiscal year. To support requirements management and capability development/integration, the JCCD conducts C2 mission capability analysis through C/S/A engagement to inform and recommend resource allocation and acquisition decisions for senior portfolio management. Additionally, the JCCD oversees maintenance and development of innovative tools and techniques to support analysis of C2 capabilities based on technical, operational, and programmatic criteria.

FY 2010 Accomplishments:

JCCD achieved an integrated mix of new and enhanced C2 capabilities for the warfighter through continuous engagement and the execution of a transparent, Department-approve C2 governance and management process.

Developed and mapped C2 requirements to new Capability Definition Packages (CDPs) for the GCCS Family of Systems (FoS) as these systems transition to, and integrate with new and updated C2 capabilities. Integrated requirements for emerging adaptive planning and execution capabilities into the joint C2 requirements process, and mapped USSTRATCOM's requirements for "course of action" capabilities to broader joint C2 requirements. Executed C2 Governance and Management responsibilities to co-chair seven JCCD Council of Colonel events with the Joint Staff J36 (JS/C/S/A membership) to resolve issues on GCCS-J and Joint C2 configuration management, air battle planning software, common operating picture interoperability, C2 capability gap analysis, cross domain solutions, and coalition information sharing. Worked with the Vice Chairman, Joint Chiefs of Staff to define and implement a new agile approach to identify joint C2 capability need priorities to support rapid information technology (IT) capability development. This approach was codified in the Joint C2 Capabilities Requirements Governance Charter and approved by the Joint Requirements Oversight Council.

FY 2011 Plans:

Continue C2 capability prioritization and sequencing via the agile Plan Build process, with follow-on capability production, integration and deployment. Provide direct 'hands-on' engagement to materiel developers to operationally shape products while ensuring requirements traceability. Update JCCD management documents to support changing Department directives and instructions. Continue to maintain and manage C2 requirements databases, and utilize C2 governance and management forums to adjudicate and prioritize needed changes to the GCCS FoS (cross domain solutions, information sharing, security cooperation, planning modeling & simulation). Ensure operation of the GCCS FoS while transitioning C2 capabilities to an agile enterprise environment. Re-assess GCCS FoS sustainment strategy based on RMD 700 funding adjustments. Continue to engage with

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
interagency, multi-national and non-government organizations to address requirements for vertical and horizontal collaboration and information sharing. Leverage the Joint C2 Capability Requirements Governance Charter to ensure appropriate requirements governance is achieved throughout the life-cycle of ongoing joint C2 and associated programs. Lastly, work with the NATO C2 Centre of Excellence to develop a construct to organize and share Component C2 information elements. Continue to execute complex problem analysis through the use and continued development of innovative tools and techniques to support analysis of C2 based on technical, operational, and programmatic criteria that support the C2 community of interest at large. Tools include: Net-Enabled Requirements Identification Database (NRID) enhancement – refine application to enable greater accessibility and visibility to include incorporation of Decision Support Tool functionality; Command and Control Registry (C2R)/C2 Pedia development – reengineering the C2R database to accommodate a variety of data types and multiple data sets and integrate a highly robust enterprise search engine that supports advanced data discovery, mining and aggregation across the web; Command and Control (C2) Central - continue to expand C2 Central's comprehensive system descriptions, document library, images, architectures, analysis and visualization tools capabilities, yellow pages and interactive calendar of events and further refine search engine capabilities for the user, to include incorporation of the Joint C2 Capability Area Matrix (CAM) functionality; and Visual C2 Capability Analysis and Tradeoff Suite (VCATS) – initiating prototype development of an assessment framework and interactive "dashboard" to demonstrate the ability to make C2 Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) tradeoffs and recommendations. ***FY 2012 Plans:*** Continue C2 capability prioritization and sequencing via the agile Plan Build process, with follow-on capability production and deployment. Provide direct 'hands-on' engagement to materiel developers to operationally shape products while ensuring requirements traceability. Participate with programmatic Focus Integration Teams (FITs) to develop funding needs for joint C2 architecture and data standards needed to migrate C2 to a services-oriented environment. Leverage C2 forums to support changing Warfighter needs in an irregular warfare battlespace, including a holistic Adaptive Planning and Execution integrated plan (per FY12-16 DPPG) to begin replacing legacy C2 capabilities. Sustain and synchronize critical GCCS FoS capabilities while transitioning joint C2 to agile, objective capabilities. Refine CDPs for Adaptive Planning and Execution and Multi-national Mission Partner requirements and capability needs. Support and align NATO C2 Centre of Excellence C2 information capabilities. Capability analysis tool updates include: Command and Control (C2) Central - continue to expand C2 Central's comprehensive system descriptions; document library; images; architectures; analysis and visualization tools capabilities; yellow pages and interactive calendar of events; Visual Command and Control Capability Analysis and Tradeoff Suite (VCATS) Continuation – further development of an assessment framework and an interactive "dashboard" to improve the ability to make C2 Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) tradeoffs and recommendations; and develop interfaces to the Joint Staff Capability Development Management Tool (CDMT).			
Title: Data Strategy	8.067	6.051	6.218

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012

Description: Primary objective for this effort is the Joint warfighter ability to access, share and fuse critical C2 information using common standards. Currently, operators do not have visibility of what data exists for their use and/or may experience difficulty in accessing that data due to a lack of system or software interoperability. If they are able to access the data, they may not be able to understand the data or determine if it is applicable, current, or trusted. Data producers struggle with standards for sharing, describing, and tagging data so that operational consumers and their supporting systems may use it.

As the military lead for C2 data strategy, we work with the Combatant Commands, Services, and Agencies COCOM/Service/Agency (C/S/A) to achieve the primary outcome and efficiencies associated with making C2 data assets visible, accessible, understandable and interoperable by (1) Leading an effective C2 Data Strategy management construct to include guidance and policy recommendations; (2) Developing and refining C2 Data Standards and Best Practices; (3) Compiling Authoritative Data Source (ADS) inventories, generating exposure metrics and synchronizing ADS exposure with C2 Capability development; and (4) Supporting C2 Data Pilots, Joint Capability Technology Demonstrations (JCTDs), and other Data Strategy implementation activities in order to increase the Joint warfighter's access to C2 information.

FY 2010 Accomplishments:
Published C2 Core Version 1.0, a comprehensive C2 information exchange data standard which includes re-usable components, a suite of rules (extension, naming and design, and conformance), tools, and associated documentation. Established a configuration management process and Configuration Control Board for C2 Core artifacts. Published the Joint Authoritative Data Source (ADS) Directory and fed that data into the DoD Enterprise ADS Registry. Compiled and reported ADS exposure metrics quarterly. Developed and executed an ADS Annual Review Board process in conjunction with the Joint C2 Build/Plan process to synchronize data exposure with capability development. Completed C2 Data Pilot Phase 4B, an effort to expose Force Management ADS and support the development and refinement of the underlying technologies supporting net-enabled C2 capabilities. Provided Operational Management and technical support to the Tactical Data Edge Solution (TEDS) JCTD, an effort to transition tactical edge data exchange mechanisms into the net-enabled environment. Led the C2 Data and Services Steering Committee, which provides a formal process to establish C2 data sharing priorities and standards for C2 capabilities. Reviewed over 30 Information Support Plans (ISPs) and capability development documents for data strategy compliance.

FY 2011 Plans:
Continuing the work accomplished in FY 2010 by publishing C2 Core Version 2.0, a comprehensive C2 information exchange data standard which includes re-usable components, a suite of rules (extension, naming and design, and conformance), tools, and associated documentation. Provide C2 Core training and support to FY 2011 C2 Core piloting activities and other C2 Core development and implementation activities. Continue C2 Core configuration management and chair of the C2 Core Configuration Control Board. Execute FY 2012 ADS Annual Review Board in conjunction with the Joint C2 Build/Plan process to synchronize data exposure with capability development. Maintain C2 ADS information in the DoD Enterprise ADS Registry and compile and

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
report ADS exposure metrics quarterly. Generate operational impact focused ADS Exposure metrics. Execute Operational Utility Assessments (OUAs) for TEDS JCTD Increment I and Increment II. Provide data strategy and information assurance reviews and recommendations for Information Support Plans (ISPs), capabilities development documents, and guidance and policy documents. Lead the C2 Data and Services Steering Committee, which provides a formal process to establish C2 data sharing priorities and standards for C2 capabilities. ***FY 2012 Plans:*** Continue configuration management of C2 Core Version 2.0+ and chair the C2 Core Configuration Control Board. Monitor and report C2 Core implementation progress based upon the C2 Core Implementation Plan and refine as needed. Provide C2 Core training and support to C2 Core implementation activities. Execute FY 2013 authoritative data source (ADS) Annual Review Board in conjunction with the Joint C2 Build/Plan process to synchronize data exposure with capability development. Maintain C2 ADS information in the DoD Enterprise ADS Registry, compile and report ADS exposure and operational metrics. Lead C2 Data Pilot Phase 5. Execute Operational Utility Assessments (OUAs) for TEDS JCTD Increment III and begin transition of the solution to the identified programs of record. Provide data strategy and information assurance reviews and recommendations for ISPs, capabilities development documents, and guidance and policy documents. Lead the C2 Data and Services Steering Committee, which provides a formal process to establish C2 data sharing priorities and standards for C2 capabilities.			
Title: Integrated Fires ***Description:*** Primary objective for this effort is the integration of Joint Fires Capabilities for US and Coalition Partners that improves combat / mission effectiveness while minimizing fratricide and collateral damage through actions in the following areas: Joint Close Air Support (JCAS), Combat Identification (CID), Friendly Force Tracking (FFT) (including Joint Blue Force Situational Awareness), Joint Fires, Fires related Joint Command and Control Capabilities, and Integrated Air and Missile Defense (IAMD). ***FY 2010 Accomplishments:*** Executed CID-FFT Action Plan: Led actions to incorporate Position Location Information (PLI) (Blue Force Tracking) security policy. Monitored PR11/POM 12 execution for a synchronized Service acquisition of Mode 5 IFF capability, with an Initial Operating Capability (IOC) in 2014 and Full Operational Capability (FOC) in 2020. Led the NATO FFT Ad Hoc Working Group (AHWG) providing the US Head of Delegation. 2010 projects included: NATO FFT Reference Architecture, FFT standardization for NATO, improvements to the interim NFFI standard and the emerging FFT Standardization Agreement (STANAG). Maintained a Joint Friendly Fire Data Base of real world combat fratricide events, and conducted trend analysis. Produced Friendly Fire Database study in July 2010. Organized and initiated a multi-service/agency DSD-tasked effort for Joint Cooperative Target Identification – Ground (JCTI-G) Analysis of Alternatives (AoA) to determine preferred materiel alternatives for a CID capability in both Fires on Dismounts (FoD) and Air-to-Ground domains. Developed a multi-service/agency cost effective Mode 5 Level 2 Joint	3.542	3.102	8.800

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Implementation Strategy and Mode 5 Community Task approach approved by the both CID-FFT Executive Steering Committee (ESC) and DUSD AT&L JFI. Executed JCAS Action Plan: Evaluated and monitored Joint Terminal Attack Controller (JTAC) training standardization and accreditation throughout Department of Defense and participating Coalition countries (conducted 7 biennial reviews and 1 accreditation). Expanded Coalition participation in JCAS WG, JFS ESC and JTAC Standardization Team. Supported CENTCOM, Services, and SOCOM in defining JTAC requirements. Revised the JTAC MOA, signed by the Services, SOCOM and 9 Partner Nations. Updated the JCAS Action Plan and managed 10 active and 4 ongoing issues through the conduct of 4 JCAS WGs, 4 Joint Fire Support (JFS) ESC O6 WGs, and 3 JFS ESC Principal (FOGO level) meetings. Established a JCAS standard for DACAS to improve warfighting capability and reduce fratricide. Developed, staffed, adjudicated and executed JFS 2010 Action Plan consisting of ten joint and combined prioritized issues as nominated by C/S/A Stakeholders and Partner Nations. Delivered plan of action for recommending solutions to Airspace Control and Tactics, Techniques and Procedures (TTP) gaps and shortfalls to improve C2 systems and airspace control measures integrating and deconflicting joint airspace with joint fires. Improved cooperation, integration, and interoperability of future Combined Fires capabilities and systems within the five member nations of Australia, Canada, Great Britain, New Zealand, and the United States. ***FY 2011 Plans:*** FY 2011 Plans: Continue Execution of CID-FFT Executive Steering Committee (CID-FFT ESC) actions: Monitor POM 13/14 efforts for continued execution of a synchronized Service testing, acquisition and fielding of a Mode 5 IFF capability, with an IOC in 2014 and FOC in 2020. Maintain Joint Friendly Fire Data Base of combat fratricide events, and conduct trend analysis. Continue to conduct multi-service/agency DSD tasked effort for a Joint Cooperative Target Identification – Ground (JCTI-G) AoA. Execute multi-service/ agency cost effective Mode 5 Level 2 Joint Implementation Strategy and Mode 5 Community Task approach approved by both CID-BFT ESC and USD AT&L JFI. Lead the NATO FFT AHWG - provide US Head of Delegation. Develop a STANAG for the CID Server capability to provide the service for forwarding friendly force information to weapon delivery decision makers and platforms. Continued Execution of Joint Fire Support Executive Steering Committee (JFS ESC): Conduct JTAC Stan Team Initial Accreditation visits; staff assistance visits and Biennial Reviews as directed by the JFS ESC. Continue NATO / coalition partner expansion efforts. Revise/update JFS ESC endorsed JTAC Simulation Accreditation Criteria. Coordinate production of Joint Digitally-Aided Close Air Support TTP and assist developing DACAS assessment plans and engineering changes. Continued Execution of JFS 2010 Action Plan in FY2011 to include: Airspace Control and TTP, Senior Leader and Strike Advisor Education, UAS Integration, Mensuration, Fire Support Systems Standardization and Digital Interoperability, Fires Resource Allocation, Collateral Damage Estimation (Training and Execution), Service Training Interface, Joint Operational Planning and Execution			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
System (JOPES) Volume II Enhancements, and Joint Irregular Warfare Force Structure. Continue to lead Missile Defense interoperability efforts. ***FY 2012 Plans:*** Continue execution of JFS/JCAS and CID-BFT Action Plans. Implement actions for DACAS across the services. Expand coalition participation in the JTAC MOA and JTAC Standardization Teams. Continue execution of Coalition Combat Identification Capability Development series, BOLD QUEST.			
Title: Joint Architecture Integration and Development ***Description:*** Primary objective for this effort is to develop and integrate joint architectures and conduct analysis for multiple C2 related efforts that will provide near-term benefit to combatant commands and their war fighters and serve to ensure integration of Service, agencies and mission partner capabilities development. There are four foundational efforts that provide the architecture, analysis, and services to the warfighters and supporting elements: - Joint Combat Capability Development Architecture efforts consist building service oriented architectures to support specific joint C2 future capabilities. - The Joint Force Architecture, Standards, and Analysis develops architectures, conducts analysis to improve joint force capabilities and readiness. Additionally, the Joint Common Systems Function List (JCSFL) is refined and validated to provide a comprehensive lexicon of warfighter and supporting element system functionality descriptions used to develop integrated architecture and support the assessment of capabilities across DoD. Joint Capabilities Integration Development System (JCIDS) architectures are reviewed for joint integration and interoperability. - Joint Architecture Federation and Integration is the solution to exchange architectures and authoritative sources of information independently of any architectural development tool, through web services and standardized portal interfaces. - Joint Mission Threads are operational and technical description of end-to-end set of activities and systems that characterize events, processes, information, and data exchange for interoperability analysis of joint capabilities. Conduct Architecture Driven Analysis (ADA) done using operator's requirements, run against tactics, techniques, and procedures (TTPs) and systems capabilities to identify gaps and potential solutions. ***FY 2010 Accomplishments:*** Joint Combat Capability Development Architectures: Developed for the JCCD Joint C2 Capability Plan-Build process capabilities based architectures that define the relationships between warfighter requirements, system/service functionality, authoritative data sources, and net-centric enterprise services.	4.663	7.202	7.933

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Joint Force Architecture, Standards, and Analysis: Improved the readiness of HQ JTF (Joint Task Force) WMD (Weapons of Mass Destruction) elimination by sourcing C2 systems shortfalls by working closely with the parent Service. Analyzed and developed the JTF Deployable Maritime Command and Control Capability that had "Increased Emphasis" in POM 12, supported issue papers for C2 Capability portfolio Management (CPM)- JTF Deployable Maritime Command and Control Capability was funded by OPNAV. Successfully coordinated and developed C2 on the Move (C2OTM) Initial Capabilities Document (ICD) – JROC approved. Analyzed broadband cellular, wireless and Aerial Layer Network capabilities for gaps and interoperability issues that affect JTFs in USCENTCOM's AOR and Service Programs in the JCIDS cycle. JCSFL Version 3 updated and improved to include Service submitted CSFL changes, logistics and transportation system functions. The update represents a 25% increase in the scope of warfighter system functionality descriptions addressed by the JCSFL. Federation: Completed Joint Architecture Federation Proof of Concept with selected Army and USMC architecture systems. Mapped DoDAF MetaModel for architecture data sharing. Developed Federation Use Case on Integrated Air and Missile Defense (IAMD) as part of Phase I and closely coordinated with IAMD community to successfully start the federation effort. Developed a logical data exchange example for sharing of federated capability information from various architecture repositories. Joint Mission Threads: Led the Digitally-Aided Close Air Support (DaCAS) Coordinated Implementation (CI) Change Control Board (CCB). The CCB delivered DaCAS Block 1 Engineering Change Proposals (ECP) that will deliver a fully interoperable DaCAS capability in the FY 2012-2014 timeframe. The CCB has reached approval for DaCAS Block 2 ECPs through documentation and submission to the Joint Fires Support Executive Steering Committee (JFS ESC). A DaCAS Block 1 Test Package and Test Tools were developed and will be provided to the 13 program managers executing the Block 1 ECPs. Delivered the final report of the desk top analysis to the Joint Personnel Recovery Agency (JPRA). This report provided the JPRA the necessary analysis to begin the coordinated implementation of the findings and recommendations. Partnered with OSD DOT&E to analyze personnel recovery training data to include analysis of C2 improvements and interoperability aspects at Angel Thunder '10. Managed the Joint Mission Thread Architectures for Testing Working Group (JMTAT WG), completing and delivering the Concept of Operations (CONOPS) for Joint Mission Thread Development and Reuse. The CONOPs established the priorities for future JMT development by this group. Began work on the Counter Improvised Explosive Device JMT, establishing the Joint IED Defeat Organization as the sponsor. ***FY 2011 Plans:*** Joint Combat Capability Development Architectures:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Develop solutions architectures for the JCCD Joint C2 Capability Plan-Build process through the development of Joint C2 Capability requirements/needs based architectures that define the relationships between warfighter requirements, system/service functionality, authoritative data sources, and net-centric enterprise services. Analyze and establish testable enterprise user interface capability with and for the warfighter. Joint Force Architectures, Standards, and Analysis: Develop Joint Force Land Component Architectures at the Divisional Level. Update the JTF Component architectures with Service inputs. Update the JTF HQ C2 Baseline Template and Architectures for Humanitarian Assistance and Disaster Relief. Assist the Joint Civil Information Management Joint Test in developing operational and systems architectures. Improve the readiness of Designated JTF Capable HQs by assisting in the development of their Joint C2 Mission Essential Equipment List and providing joint C2 equipping analysis and architecture support. Develop the architecture for mission thread support to USCENTCOM and ISAF Joint Command. Develop analysis and architectures for Coalition Warfare Program project that will address interoperability issues for US and selected Troop Contributing multi-national partners operating in Afghanistan. Submit Distributed Operations Tactical C2 Architectures and Enablers issues/recommendations for the Combatant Commanders Integrated Priority List (IPL). Update the JCSFL (V4.0) and using the Net Ready Key Performance Parameters working group ensure that program managers and capability developers incorporate the changes. Coordinate and work with Service acquisition sponsors and program managers to incorporate the JCSFL into Service programs during the JCIDS process to ensure better joint integration. Review and comment on emerging DoD policy addressing C2 capability and architecture and JCIDS document reviews for conformance. Federation: Enhance Architecture Federation from proof of concept to a web-based solution on the NIPRNet and SIPRNet that will have approved architectures and their associated data so that capability developers and warfighter can access the information to help solve their challenges. Expand the Federation web services to incorporate data from widely used web sites such as JDEIS (Joint Doctrine Education and Training Electronic Information System) and CDTM (Capability Development Tracking Management Tool)/ KMDS (Knowledge Management and Decision Support). Joint Mission Threads: As the FY-10 JMTs become fully developed, the team will begin work on six more JMTs: Time Sensitive Targeting, Joint Fires, Computer Network Defense/Attack/Exploitation; Humanitarian Assistance/Disaster Relief; Integrated Tactical Warning/ Attack Assessment; and Interagency Interoperability. Provide a web-enabled portal capability for the testing, training, programming,			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
program development, experimentation, and modeling and simulation communities of interest, filling a critical void of documented JMTs. Conduct systems analysis in support of C2 CPM efforts. ***FY 2012 Plans:*** Joint Combat Capability Development Architectures: Provide architecture and analysis support for joint C2 systems and Service systems joint integration in support of Joint Combat Capability Development. Develop Solutions architectures and perform analysis to determine capability gaps, shortfalls, redundancies and joint solutions for issues affecting Joint Force C2 requirements. Joint Force Architectures, Standards, and Analysis: Update the JTF architectures for Joint Force Analysis Baselines. Continue to incorporate capability analysis processes and review JCIDS ICDs (Initial Capabilities Documents), CDDs(Capability Development Documents), CPDs (Capability Production Documents), ISPs(Information Support Plans)and TISPs (Tailored Information Support Packages)for joint interoperability and integration aspects. Provide analysis and architecture support for joint C2 systems and Service Systems joint integration convergence for POM 14. Develop solutions architectures for JS J8 sponsored initiatives. Building on the work accomplished in FY11, update JCSFL (V5.0) to add additional functions enhancing interoperability analysis. Continue to review emerging DoD policy addressing C2 capability and architectures. Continue to coordinate and work with Service acquisition sponsors and program managers to incorporate the JCSFL into Service programs during the JCIDS process to ensure better joint integration. Federation: Expand the IAMD and other JMT use cases that are federated based on Integrated Priority List issues. Continue to refine web services and standardized portal interface for exposure and federation of Joint Mission Threads, C/S/A Architectures, and other authoritative sources of data. Incorporate and align joint architecture development environment with data model and methodology standards in conjunction with OSD/NII, Joint Staff, and Service and Combatant Command communities. Joint Mission Threads: As the FY-11 JMTs become fully developed, begin work on six more JMTs based on JROC and FCB guidance. Continue efforts to enhance the capability to collaborate on, leverage and improve developed and developing JMTs. Conduct systems analysis in support of C2 CPM efforts.			
Title: Joint Capabilities Requirement Manager ***Description:*** The Joint Capabilities Requirements Manager (JCRM) is the tool warfighters and force providers use daily to request, validate, staff and allocate forces. The JCRM tool also serves to provide an electronic record of sourcing activity over	-	2.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
time providing us with an archive data base to document past global force capability demand, project future requirements and provide an authoritative data base for detailed force analysis. While JCRM in its current form is a functional tool, it is in need of functional capability improvements to achieve Final Operating Capability. ***FY 2011 Plans:*** Current planned JCRM tool upgrades are: Collaborative Staffing: This capability enables the Joint Staff, Joint Force Providers, force providers and supported Combatant Commanders(CCDRs) to collaboratively develop the most effective and efficient sourcing solutions to competing and dynamic force requirements in time to allow predictable deployment schedules for the deploying service men and women throughout DOD. Capabilities Module Development: JCRM force requirements and force provider modules are the tools that enable execution of overseas contingency operations by matching force requests with sourcing solutions. The JCRM Capabilities Module allows CCDRs to draft potential future force requirements by generating off-the-shelf capability packages to support planning. These capability packages can then be re-used by other planners. Force Deployment Development: The Force Deployment Module imports the Joint Operation Planning and Execution System (JOPES) and Time-Phased Force Deployment Data (TPFDD) and compares it with the supported CCDRs force requirement and the SECDEF's ordered deployment. This validation check ensures the right forces are deploying to the right place at the right time. Joint Individual Augmentee Model: This capability improves the data sharing interface between electronic Joint Manpower and Personnel System (eJMAPS) and JCRM while providing functionality to manage Joint Manning Document for individual augmentation currently nonexistent in JCRM. The capability will enable follow-on analysis, GFMAP orders generation and management as well as change management. This capability will automate the Global Force Management Allocation Plan (GFMAP) Annex D order that currently numbers 16,284 lines in the FY10 GFMAP Annex D spreadsheet.			
Title: Joint Blue Force Situational Awareness (JBFSA) ***Description:*** Primary objective is to improve overall Friendly Force Situational Awareness and to develop solutions that reduce the potential for friendly fire. The primary outputs and efficiencies to be realized are increased development and integration of common data formats and the modification of supporting software / architectures to: 1) Allow Position Location Information/ Situational Awareness data to flow freely among U.S., NATO and coalition forces; 2) Increase capability and capacity for Data Dissemination through the establishment of net-centric integrated services; 3) Increase / improve Joint Air - Ground Situational Awareness sharing capacity / capability through technical solutions, Concept of Operations, Tactics, Techniques and Procedures delivery, along with the development, integration, testing, production, and deployment of airborne Friendly Force Tracking (FFT) capabilities; 4) Improve and increase force capability for Battlefield De-confliction / Fratricide Avoidance, by increasing interoperability of systems through FFT data exchange standardization; and 5) Increase integration and availability of FFT data between tactical and logistics support forces.	0.800	1.300	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Developed capability to provide Friendly Force Tracking (FFT) data to U.S. and Coalition aircraft over various tactical data links (i.e. Link 16). Provided the location of the nearest five friendly entities equipped with a FFT device in relation to a target/ area of interest. Developed and implemented an Iridium Translation Service supporting USSTRATCOM. Provided Geographic Combatant Commands and other authorized FFT users supported by the USASMDC/ARSTRAT Mission Management Center with a single integrated service-oriented message processing architecture that supports current and future FFT functions with well-defined interfaces, scalable services, streamlined operations and increased maintainability in response to critical operational requirements. Replaced over a dozen legacy message processing applications with a single integrated service-oriented message processing architecture, improving efficiency and reducing the potential for fratricide. ***FY 2011 Plans:*** Develop a capability for FFT systems to operate in a low-bandwidth, austere environment. Identify and assess LPI/LPD waveform options, including integration of Global Personnel Recovery System capability to support Special Operations. ***FY 2012 Plans:*** Project Completed			
Title: Coalition Combat Identification (CCID) Advanced Concept Technology Demonstration (ACTD)/BOLD QUEST ***Description:*** Primary objective for this effort is to integrate and assess U.S. and Allied combat identification capabilities in order to inform U.S. and Allied investment in both materiel and non-materiel solutions to the needs of coalition warfighters in current and future operations. During 2003-2007 the Coalition Combat Identification Advanced Concept Technology Demonstration (CCID ACTD) assessed the military utility of emerging combat identification technologies in a series of operational demonstrations that became more commonly known as the Bold Quest series. The technologies assessed provided both cooperative and non-cooperative target identification capabilities, enabling coalition ground forces and aircrew to identify friendly, enemy and neutral ground entities, thereby improving their Situational Awareness and “shoot/don’t shoot” decision-making. International participation, reflected in the commitment of both technologies and forces, has grown from an original six nation partnership to a coalition of fourteen nations providing technologies, forces and analytical resources. Since 2007 the Bold Quest participants have increasingly incorporated the development of Tactics, Techniques and Procedures with technical development and testing; most notably in the area of Digitally Aided Close Air Support (DACAS) and Joint Fires Threads. ***FY 2010 Accomplishments:*** Production of the BOLD QUEST 2009 Coalition Military Utility Assessment (CMUA) Report with contributing analysts representing all Service and National participants. This extensive body of work, comprising 2,000 pages of event data and analysis, was formatted for distribution among NATO and coalition partners to inform national authorities and decision-makers. The BOLD	4.301	4.101	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
QUEST 2009 CMUA Report was packaged, along will all previous BOLD QUEST CMUA Reports, into a comprehensive DVD for ease of reference and distribution to all concerned parties, including the OSD-chartered US Joint Cooperative Target ID-Ground Analysis of Alternatives group. Concurrently, several nations led by the USA (USJFCOM), Great Britain and Norway planned and conducted three weeks of air/ground testing of the Combat ID Server (CIDS) and DACAS capabilities during Bold Quest 2010 in Norway. The resulting data and analysis informed further collaborative GBR and USA CIDS developmental work, along with the integration undertaken by other nations to achieve interoperability between own systems and the emerging CIDS capability. Concept Development and Initial Planning for BOLD QUEST 2011 was accomplished, highlighted by three major conferences, each drawing in excess of 100 representatives of the participating 14 nations. The outcome established the basis for further planning, technical and operational preparations for BOLD QUEST 2011 scheduled for 4Q2011. ***FY 2011 Plans:*** The BOLD QUEST 2011 focus is on the Combat ID issues associated with “Fires on Dismounts”, including both surface and air fires, direct and supporting. Reflecting a growing international consensus in the Family of Systems approach, fostered in previous BOLD QUEST events, the fourteen BOLD QUEST 2011 participating nations are sponsoring a range of Cooperative Target Identification (Query/Response), Situational Awareness and Digitally Aided Fires initiatives that will exploit current and emerging Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) capabilities. The assessment strategy is to establish a robust environment, representative of coalition operations, in which to test varied methods of identifying friends, neutrals and enemy enabling effective engagement. Air and Ground elements from the participating nations will collectively demonstrate the ability to produce timely and accurate Position Location Information (PLI) and share that information across coalition and security domains. Planning is underway to establish the BOLD QUEST 2011 venue during late Aug-Sep 2011 at the Camp Atterbury/ Muscatatuck, Indiana Center for Complex Operations. Networking this live Air/Ground testing to other CONUS and international nodes is envisioned. The BOLD QUEST 2011 footprint is projected to include 700 personnel, 25 fixed wing aircraft and 50 ground vehicles engaged in three weeks of day/night scenarios reflecting current operations. ***FY 2012 Plans:*** Project Completed			
Title: Capability Engineering ***Description:*** Primary objective of this effort is to provide System-of-Systems Engineering (SoSE) support to the Joint Capability Development (JCD) process developing, using, and making available for reuse Joint Mission Threads (JMT) for joint context. This requires detailed JMT data collection, representation, and analysis in conjunction with Services and COCOMs for consensus. A Capability Engineering (CE) approach, developing and leveraging JMT architectures, will efficiently and effectively provide capability gap analysis and solutions. Using developed architectural products, data, and data relationships, the CE team will provide detailed capability engineering analysis to support JCD functions, including the administration of JMT composition and	2.252	4.252	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
reuse, development of executable architectures that can be further refined through modeling and simulation, detailed analysis and assessment of capability gaps, recommended solutions, and coordinated implementation of capability improvements. ***FY 2010 Accomplishments:*** Led the Digitally-Aided Close Air Support (DACAS) Coordinated Implementation (CI) Change Control Board. The Change Control Board delivered DACAS Block 1 Engineering Change Proposals (ECP) that will deliver a fully interoperable DACAS capability in the FY 2012-2014 timeframe. The Board has reached approval for DACAS Block 2 ECPs through documentation and submission to the Joint Fires Support Executive Steering Committee (JFS ESC). A DACAS Block 1 Test Package and Test Tools were developed and were provided to the 13 program managers executing the Block 1 ECPs. Delivered the final report of the desk top analysis to the Joint Personnel Recovery Agency (JPRA). This report provided the JPRA the necessary analysis to begin the coordinated implementation of the findings and recommendations. Partnered with OSD DOT&E to analyze personnel recovery training data to include analysis of C2 improvements and interoperability aspects at Angel Thunder 2010. Managed the Joint Mission Thread Architectures for Testing Working Group (JMTAT WG), completing and delivering the Concept of Operations (CONOPS) for Joint Mission Thread Development and Reuse. The CONOPS established the priorities for future JMT development by this group. Began work on the Counter Improvised Explosive Device Joint Mission Thread (JMT), establishing the Joint IED Defeat Organization as the sponsor. ***FY 2011 Plans:*** Manage the DACAS Change Control Board through completion of Block 1 ECP implementation and begin Block 2 ECP builds. Continue to support JPRA in the coordinated implementation of command and control improvements across the Services, identifying and executing a Block 1 concept. These coordinated implementation activities are providing interoperable and integrated capability improvement to the warfighter's ability to conduct the Joint Close Air Support mission and the Personnel Recovery mission. As the FY-10 JMTs become fully developed, the team will begin work on six more JMTs: Time Sensitive Targeting, Joint Fires, Computer Network Defense/Attack/Exploitation; Humanitarian Assistance/Disaster Relief; Integrated Tactical Warning/ Attack Assessment; and Interagency Interoperability. Provide a web-enabled portal capability for the testing, training, programming, program development, experimentation, and modeling and simulation communities of interest, filling a critical void of documented JMTs. ***FY 2012 Plans:*** In FY 12, This project is incorporated into Joint Architecture Integration and Development			
Title: Capability Transition Management ***Description:*** Primary objective is to transition capabilities that solve Joint Warfighting requirements for both material and non-material solutions. The capabilities developed and transitioned provide workable solutions identified by Combatant Command	2.201	1.201	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Commanders, Services and Agency inputs. These inputs are validated through coordinated WarFighter Challenge and Experimentation process (J9), Joint Training exercises (J7), Lessons Learned and Forward Support Element inputs (JCOA), Coalition Warrior Interoperability Demonstration (CWID) interoperability trial assessments (J8/JSIC), Irregular Warfare forums (JIWC) and Regional COCOM Joint Urgent Operations Need Statements (J8). Additionally, transition activities are focused on the development and processing of acquisition documentation to include; JCIDS requirements, Certification and Accreditation documentation, CONOPS, Technology Transition Agreements, and Test and Evaluation results. The objective for a material transition is to successfully transfer responsibility and ownership of developed and mature capabilities to formal acquisition programs. The objective for non-material transition is to ensure that the DOTMLP-FP Change Request (DCR) is institutionalized in a COCOM, Service or Agency and implemented across DoD. ***FY 2010 Accomplishments:*** The project list below is representative of transition actions complete or still in work from FY 2010. The forecast is the same for FY 2011, with approximately 20 command wide efforts that require transition assistance: Joint Integrated Persistent Surveillance (JIPS) - DCR for change in definitions (Doctrine focus) Joint Distributed Operations (JDO) - CONOPS Joint Counter-Intelligence and Human Intelligence - DCR Multinational Experiment (MNE-6) – CONOPS/DCR Countering Irregular Threats - CONOPS/DCR Comprehensive Approach to Building Partnerships (CABP) CONOPS/DCR Countering Weapons of Mass Destruction (CWMD) CONOPS/DCR Adaptive Logistics Network CONOPS/DCR Joint Operational Access CONOPS/DCR Joint Airborne Communications System (JACS) - Completed Proof of Concept demonstration. JACSv3 is being implemented by CENTCOM as a gap filler until the more robust JALN capability becomes available to the WarFigher. ***FY 2011 Plans:*** Conduct integration and transition support to the Command Directorates, Commands, and Activities to include: J3/4, J5, J7, J9, JCOA, JECC, and JIWC. Projects listed below are representative of the command projects requiring transition activity. The projects have been endorsed by the Joint Concept Development and Experimentation enterprise under the Warfighter Challenge process. Joint Logistics Concept Assessment and Deterrence Operations Multinational and Interagency Info Sharing C2 in a Denied/Degraded Environment			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Cyber Computer Network Defense Cyber Computer Network Attack and Exploitation Ballistic Missile Defense [BMD] C2 Integration BMD Phased Adaptive Planning MNE 7 Global Commons Security Force Assistance Synchronization Integrated Financial Operations The Cooperative Security (CS) JCTD - serve as Transition Manager for the Cooperative Security JCTD, developing the transition management strategy and plan for the CS CONOPS, TTPs, Data Access Agreements, training, and a software solution called UNITY. UNITY will transition the 1st increment DoD Enterprise solution for Unclassified Information Sharing (UIS) called the All Partners Access Network (APAN). ***FY 2012 Plans:*** Project Completed			
Title: Coalition Warrior Interoperability Demonstration (CWID) ***Description:*** Primary objective of this effort is to improve overall management, oversight and operational support to DoD acquisition entities seeking the capabilities of new, commercial technology that can fill existing gaps in the DoD C2ISR infrastructure while expanding coalition team building with NATO and Five Eyes nations, other Coalition Partners, and US military/ defense agencies. The primary outputs and efficiencies to be realized are increased support to the DoD Acquisition community identifying and assessing commercial capabilities that have potential to meet existing, but unresolved DoD C2 requirements, i.e. improve coalition command, control and coordination for both conventional and irregular warfare operations in the following areas: - Capabilities that improve leader centric, net-enabled operations; - Capabilities that enhance coalition battle space situational awareness; - Capabilities that enhance coalition logistics planning and nation building capabilities; - Capabilities that enhance coalition, military, government agency, international organization and non-governmental organization partnership - Capabilities that improve secure information sharing between disparate security domains and communities of interest in an operational environment;	-	1.560	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Capabilities that improve centralized command, decentralized control for irregular / hybrid warfare units. ***FY 2010 Accomplishments:*** CWID 2010 was completed in Jun 2010. Following a year-long planning process, the four week demonstration was conducted in venues hosted by the United States, United Kingdom, Canada and NATO to investigate technologies that enhance warfighting C4ISR capabilities, and civilian first responder efforts. Overall 22 nations participated in the CWID venues. Thirty two commercial, DoD and partner technologies (22 U.S. /7 Canadian/2 Italian/1 Finnish/1 Danish) participated in US CWID as interoperability trials (IT) framed within coordinated International Security Assistance Force (ISAF) and Homeland Security/ Homeland Defense (HS/HD) scenarios. Over 1200 individual assessment tasks supporting Information Assurance (IA), Technical Interoperability (IOP) and Warfighter Utility Assessments (WUA) were completed. CWID 10 execution threads included: IT use as core systems in the C2 architecture; trial assessment enhancements; increased cross-site scenario interaction encouraged by the ISAF scenario; investigation of "Whole of Government" capabilities. Eleven of the 32 Interoperability Trials were assessed as "Top Performing Technologies" meriting consideration for further investigation and transition by the acquisition community. Completed Transitions: Mobile Modular, Micro C4 Gateway - CWID 2009 Trial - transitioned to GSA schedule and NATO Basic Order Agreement Coalition open Joint Operations Picture - CWID 2008 Trial - transitioned into OSD's Coalition Warfare Program Tactical Cellular – CWID 2009 Trial – transitioned into SOCOM HBCOTM Program Cross Domain Collaborative Information Environment JCTD – CWID 2009 Trial – transitioned into DISA Programs ***FY 2011 Plans:*** Serve as the lead for CWID, responsible for the strategic planning, execution and overall success of the annual demonstration event. Issue CWID 2011 final report and recommend capabilities for continued evaluation. Direct and conduct five major planning conferences that select the trials to be presented in CWID 2011. Develop and demonstrate synergies between the CWID C2 and Empire Challenge ISR efforts. The CWID 2011 level of effort and participation is forecast to support CENTCOM, EUCOM, NORTHCOM C2 interoperability requirements. Forty-four Interoperability Trials have been selected a significant of which will focus on system interoperability and information sharing in support of the Afghanistan Mission Network construct. ***FY 2012 Plans:*** Project Completed			
Title: Recognition of Combat Vehicles (ROC-V) ***FY 2010 Accomplishments:***	1.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Developed and maintenaned Air-to-Ground and Maritime ROC-V training software modules. Collected 20 tactical vehicle and 15-20 small boat thermal and daylight visible images in a controlled range environment. Completed Model & Simulation development efforts to transition already collected images to 3-D models. Fielded Air-to-Ground CVI training products to the warfighter.			
Title: Joint Data Integration ***FY 2010 Accomplishments:*** Completed a JDI Functional Solutions Analysis (FSA). Submitted a DOTMLPF Change Recommendation (DCR) supporting POM12 decision cycle that incorporates standardization of the JDI Operations Cell manning at JTF HQ levels and establishes a formalized training environment to educate future JDI Ops personnel to perform the functions assigned in CJCSM 3115.01B. Implemented the next phase of the JDI operational validation, incorporating USPACOM and USEUCOM objectives in synthetic venues selected by operators (Terminal Fury 10 and Austere Challenge 10).	1.100	-	-
Title: Turnkey Command and Control ***FY 2010 Accomplishments:*** JTF HQ C2 Architectures, Analysis, and Equipping Process supported future designated JTF HQ in their preparation and certification phases to include completion of 20th Support Command, (JTFE) and USCENTCOM's Improving Readiness Programs efforts for designated JTF HQs. JTF HQ C2 Architectures, Analysis and Equipping Process supported C2F as they maintained their readiness as a designated JTF for USSOUTHCOM. The JTF HQ Working Group conducted staff assistance visits to other geographic combatant commands (e.g. USCENTCOM, USNORTHCOM, USPACOM, USAFRICOM, and USSOUTHCOM) in support of their JTF HQ Improving Readiness Programs. Worked with multinational partners and Interagency organizations to improve their ability to be able to be integrated into a JTF HQ as fully functioning partners. Turnkey will transition to the Joint Architecture project as of 2011 under the “JTF HQ C2 Architectures, Analysis and Equipping Process” section.	0.600	-	-
Accomplishments/Planned Programs Subtotals	52.667	44.139	29.880

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Performance of Joint Integration and Interoperable systems is measured by successful delivery of systems solutions to Combatant Commands by required delivery dates. Six initiatives were developed to address Friendly Force Tracking and Combat Identification capability gaps. Two new Recognition of Combat Vehicles (ROC-V)

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

training software modules (Air-to-Ground and Maritime) were developed. Two designated JTF Headquarters (JTF-S and JTF-E, 20th Support Command) readiness as a JTF Capable Headquarters was improved.

Performance of the C2 Portfolio Manager is measured by the delivery of warfighting capability enhancement recommendations. C2 CPM POM recommendations favorably influenced material and non-material decisions related to: Combat ID and Blue Force Tracking, Adaptive Planning, Deployable C2, Data Strategy and JTF manning and equipping. Capability Definition Packages (CDPs) 1 thru 6 were completed and forwarded to material developers in support of objective C2 requirements for use in the development of Joint net-enabled and agile C2 capabilities. Bold Quest 09 will serve as the primary forum for demonstration and assessment of the Joint Aerial Layer Network and evaluation of Personnel Recovery C2 systems and techniques.

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

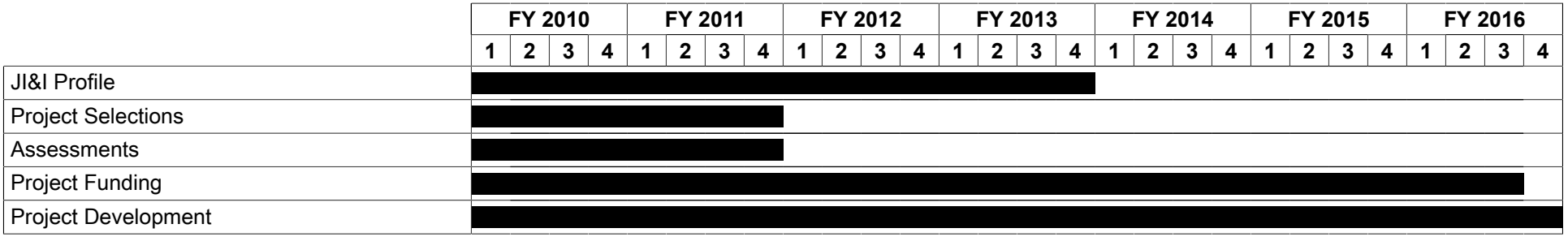

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0607828D8Z: *Joint Integration & Interoperability*	**PROJECT** P818: *Joint Integration & Interoperability*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JI&I Profile	1	2010	4	2013
Project Selections	1	2010	4	2011
Assessments	1	2010	4	2011
Project Funding	1	2010	3	2016
Project Development	1	2010	4	2016

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*				R-1 ITEM NOMENCLATURE PE 0303140D8Z: *Information Systems Security Program*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	12.975	14.077	11.753	-	11.753	11.703	12.075	12.305	12.400	Continuing	Continuing
140: *Information Systems Security Program*	12.975	14.077	11.753	-	11.753	11.703	12.075	12.305	12.400	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The NII Information Systems Security Program (ISSP) provides focused research, development, testing and integration of technology and technical solutions critical to the Defense Information Assurance Program (10 USC 2224) through pilot programs and technology demonstration; investment in high leverage, near-term programs that offer immediate Information Assurance (IA) benefit; federal and multi-national initiatives; and short-term studies and research critical to protecting and defending information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. These efforts focus on Computer Network Defense (CND) and the restoration of information systems by incorporating protection, detection, analysis and reaction and response capabilities; emerging cryptographic technologies; technology transition and IA research capabilities. This program is designed to meet the requirements of 10 USC 2224 (Defense Information Assurance Program), 44 USC 3544, (Federal Information Security Management Act of 2002), OMB Circular A-130, and DoD Directives 8500.1, and 0-8530.1. This program is funded under Budget activity 7, Operational System Development because it integrates technology and technical solutions to the Defense Information Assurance Program.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	14.995	14.077	14.360	-	14.360
Current President's Budget	12.975	14.077	11.753	-	11.753
Total Adjustments	-2.020	-	-2.607	-	-2.607
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-1.600	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.420	-	-	-	-
• OSD Studies Contracts Efficiency	-	-	-1.136	-	-1.136
• DoD Service Support Contracts Efficiency	-	-	-0.746	-	-0.746
• Economic Assumptions	-	-	-0.016	-	-0.016
• NII Contractor Efficiency	-	-	-0.709	-	-0.709

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0303140D8Z: *Information Systems Security Program*

Change Summary Explanation

FY 2010: Reprogram Congressional Add to O&M -1.600 million, Program adjustment -0.420 million.
FY 2011: No change.
FY 2012: Economic Assumptions -0.016 million, OSD Study contracts efficiency -1.136 million, NII Contractor efficiency -0.709 million, DoD Service Support Contracts efficiency -0.746 million.

Studies contract Efficiencies will be realized by reducing the number of studies that we participate in while still supporting enterprise-wide information technology goals critical to DoD Mission.
Service Support Contract efficiencies will be realized by reducing the reliance on DoD Service Support Contractors by utilizing in-house government support in a constrained personnel and resource environment.
NII reduction to contractor staff efficiencies will be realized by continuing to provide policy, guidance, program oversight, and resource management for command and control (C2), communications, spectrum, information assurance, and Information Technology programs with significantly less contractor support.
Economic Assumptions will be realized by reducing our reliance on contractors while still achieving OASD(NII)/DoD CIO goals and objectives while in a constrained personnel and resource environment.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Information Systems Security Program Plans and Accomplishments	12.975	14.077	11.753
FY 2010 Accomplishments: • Reduced the DoD's cyber "attack surface" at the DoD's Internet-NIPRNet boundary gateways through a new IA enterprise architecture and its associated implementation plan. The Phase 1 implementation of the new design proved highly successful in that it stopped hundreds of thousands of external unsolicited Internet-NIPRNet transactions per day, thereby allowing a more rigorous monitoring of the transactions that did enter the GIG. ASD NII brought together network engineering and architectural experts from over 30 DoD services and agencies to work with DISA and NSA to develop and begin implementing an architectural design that increases GIG protection, optimizes internet bandwidth usage, and fields a suite of advanced NSA and IA capabilities at each gateway. • Lead the DoD cyber security community in a year-long effort to generate an integrated IA Plan V1.0 that was the DASD CIIA's number one priority. The DoD IA Plan V1.0 sets synchronized baseline capabilities, identifies gaps, and projects activities, resources, and personnel to close the gaps. CDR USSTRATCOM and the new Director CYBERCOM stated the IA Plan will be a critical element of the new comprehensive STRATCOM OP ORDER for Computer Network Operations. • Continued refinement of IA architecture, policy and IA capabilities necessary to support "end-to-end" IA capability for the GIG-including enterprise services such as discovery, collaboration, messaging, mediation, data tagging, etc. Support technology			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303140D8Z: *Information Systems Security Program*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
demonstration, development and pilots focusing functions required in mid-term (2009-2012) increment of the IA Component of the GIG architecture. • Further developed and refined engineering in-depth and vulnerability detection to support the DoD Software Assurance Strategy. • Continued refinement of SAST to provide more robust and realistic T&E, training and exercise environment. Improvements include creation of a virtual or "fake" internet, instrumentation to support CEMAT collection capabilities, DoD CAC Engine and new traffic protocols in support of IA joint exercises and the Department's international exercise program. • Continued refinement of CND improvements for integration and certification to support interoperability and operational initiatives including additional data feeds, small agency SCAP data collections, authentication and authorization, SCAP remediation standards and continued development/validation of CND data-standards. ***FY 2011 Plans:*** • Continue refinement of IA architecture, policy and IA capabilities necessary to support "end-to-end" IA capability for the GIG-including enterprise services such as discovery, collaboration, messaging, mediation, data tagging, etc. Support technology demonstration, development and pilots focusing functions required in mid-term (2009-2012) increment of the IA Component of the GIG Architecture. • Further develop and refine engineering in-depth and vulnerability detection to support the DoD Software Assurance Strategy. • Continue refinement of SAST to provide more robust and realistic T&E, training and exercise environment. Improvements include creation of a virtual or "fake" internet, instrumentation to support CEMAT collection capabilities, DoD CAC Engine and new traffic protocols in support of IA joint exercises and the Department's international exercise program. • Continue refinement of CND improvements for integration and certification to support interoperability and operational initiatives including additional data feeds, small agency SCAP data collections, authentication and authorization, SCAP remediation standards and continued development/validation of CND data-standards. ***FY 2012 Plans:*** • Continue refinement of IA architecture, policy and IA capabilities necessary to support "end-to-end" IA capability for the GIG-including enterprise services such as discovery, collaboration, messaging, mediation, data tagging, etc. Support technology			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303140D8Z: *Information Systems Security Program*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
demonstration, development and pilots focusing functions required in mid-term (2009-2012) increment of the IA Component of the GIG Architecture. • Further develop and refine engineering in-depth and vulnerability detection to support the DoD Software Assurance Strategy. • Continue refinement of SAST to provide more robust and realistic T&E, training and exercise environment. Improvements include creation of a virtual or “fake” internet, instrumentation to support CEMAT collection capabilities, DoD CAC Engine and new traffic protocols in support of IA joint exercises and the Department’s international exercise program. • Continue refinement of CND improvements for integration and certification to support interoperability and operational initiatives including additional data feeds, small agency SCAP data collections, authentication and authorization, SCAP remediation standards and continued development/validation of CND data-standards. • Develop Computer Network Defense data standards (NIST SCAP) to support IA command and control through increase situational awareness and machine-to-machine automation. • Pilot and operationalize data standards efforts (NIST SCAP); provide validation of current and emerging standards and interfaces for sustained operational use. • Develop and update DoD policies related to wireless and mobile computing as required. Develop new IA policies related to emerging mobile technologies where mobile devices are considered part of the global information grid. • Provide IA Enterprise Services support in the development of DoD-enterprise cloud computing adoption strategy.			
Accomplishments/Planned Programs Subtotals	12.975	14.077	11.753

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0303140D8Z: *Information Systems Security Program*

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0303140D8Z: *Information System Security Program*	15.939	13.682	13.985		13.985	13.895	14.140	14.507	15.055	Continuing	Continuing

E. Acquisition Strategy

N/A

F. Performance Metrics

- SAST supports CEMAT capability
- SAST available as a core enterprise IA/CND simulation tool
- CEMAT effectively supports T&E community data collection, reduction, analysis and reporting

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303260D8Z: *Joint Military Deception Initiative*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	0.925	1.161	1.241	-	1.241	1.290	1.250	1.082	1.113	Continuing	Continuing
891: *Joint Military Deception Initiative*	0.925	1.161	1.241	-	1.241	1.290	1.250	1.082	1.113	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Joint Military Deception Initiative (JMDI) is an initiative to revitalize DoD military deception planning and execution capability in the combatant commands. The Joint Military Deception (MILDEC) Program Office (JMDPO) provides oversight, guidance, and program management support for Joint MILDEC education, training, career force management, planning and operational employment of MILDEC in joint military operations. RDT&E funds will support development of next generation devices and capabilities. Additional details provided in Defense-Wide classified book.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	0.934	1.161	1.243	-	1.243
Current President's Budget	0.925	1.161	1.241	-	1.241
Total Adjustments	-0.009	-	-0.002	-	-0.002
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.008	-			
• Other	-0.001	-	-	-	-
• Department Adjustment	-	-	-0.002	-	-0.002

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Military Deception Initiative (JMDI)	0.925	1.161	1.241
Description: Joint Military Deception Initiative (JMDI) is an initiative to revitalize DoD military deception planning and execution capability in the combatant commands. The Joint Military Deception (MILDEC) Program Office (JMDPO) provides oversight, guidance, and program management support for Joint MILDEC education, training, career force management, planning and operational employment of MILDEC in joint military operations. RDT&E funds will support development of next generation devices and capabilities. Additional details provided in Defense-Wide classified book.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0303260D8Z: *Joint Military Deception Initiative*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Established a program management office in Cyber, Warfighter Innovation & Strategic Engagement (CWISE) to prepare and define MILDEC operations. Prepared OSD policy and provided oversight for MILDEC programs. Completed an Intitial Capabilities Document (ICD) for MILDEC operations. Funded proof of concept for demonstrating an IO Modeling and Simulation (M&S) architechural framework housing a loose federation of IO related tools. Additional details provided in Defense-Wide classified book. ***FY 2011 Plans:*** Establish a contract vehicle to provide IO capabilities, attributes, and services that supports OUSD(I), the Military Services, DoD, and other Federal Agencies. Additional details provided in Defense-Wide classified book. ***FY 2012 Plans:*** Acquire support for the experimentation, test, and evaluation of new MILDEC devices, decoys, tools, and technologies. Additional details provided in Defense-Wide classified book.			
Accomplishments/Planned Programs Subtotals	0.925	1.161	1.241

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0303260D8Z O&M DW: *JOINT MILITARY DECEPTION INITIATIVE*	2.850	3.064	4.458		4.458	5.710	6.625	7.377	7.586	Continuing	Continuing

E. Acquisition Strategy

The acquisition, management, and contracting strategy involves the following:

- Adherence to guidance outlined in DoD 5000, Directive 7, Federal Acquisition Regulations, and FAR Supplement Policies and Procedures
- Acquire and sustain MILDEC capabilities, systems, tools, products, and services through a disciplined, yet agile, process that enables the defense establishment to provide Information Operations, for the nation and the warfighters
- Sustain an acquisition process that is responsive and responsible to internal and external customers and stakeholders

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303260D8Z: *Joint Military Deception Initiative*

• Continue to support the warfighter's need for capabilities that dominate today's dynamic, networked battlespace by providing support directly to the warfigfhter for planning and executing MILDEC missions

F. Performance Metrics

Performance metrics are measured through revitalization of military capabilities for combatant commands.

• Time - Enables combatant command to field new capabilities
• Money - Reduces duplication of effort
• Realism - Allows exploration of new environments and capabilities
• Fidelity - Designed to achieve unity of effort throughout IO community

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305103D8Z: *Cyber Security Initiative*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	0.984	0.501	0.411	-	0.411	0.403	0.416	0.424	0.428	Continuing	Continuing
371: *Cyber Security Initiative*	0.984	0.501	0.411	-	0.411	0.403	0.416	0.424	0.428	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This initiative supports a family of Program Elements within this Program Element number that will properly align DoD-wide activities associated with Cyber Security. Activities include development/implementation of Cyber Security plans, assessments and strategies and procurement of associated hardware/software technologies. This program is funded under Budget Activity 7, Operational System Development.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	0.985	0.501	0.502	-	0.502
Current President's Budget	0.984	0.501	0.411	-	0.411
Total Adjustments	-0.001	-	-0.091	-	-0.091
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.001	-	-	-	-
• OSD Studies Contracts Efficiency	-	-	-0.040	-	-0.040
• DoD Service Support Contracts Efficiency	-	-	-0.026	-	-0.026
• NII Contractor Efficiency	-	-	-0.025	-	-0.025

Change Summary Explanation

FY 2010: Program adjustment -0.001 million.
FY 2011: No change.
FY 2012: OSD Studies contracts efficiency -0.040 million, NII Contractor efficiency -0.025 million, DoD Service Support Contracts efficiency -0.026 million.

Studies contract Efficiencies will be realized by reducing the number of studies that we participate in while still supporting enterprise-wide information technology goals critical to DoD Mission.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0305103D8Z: *Cyber Security Initiative*

Service Support Contract efficiencies will be realized by reducing the reliance on DoD Service Support Contractors by utilizing in-house government support in a constrained personnel and resource environment.
NII reduction to contractor staff efficiencies will be realized by continuing to provide policy, guidance, program oversight, and resource management for command and control (C2), communications, spectrum, information assurance, and Information Technology programs with significantly less contractor support.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Cyber Security Initiative	0.984	0.501	0.411
FY 2010 Accomplishments: •Details provided at higher classification under separate cover.			
FY 2011 Plans: •Details provided at higher classification under separate cover.			
FY 2012 Plans: •Details provided at higher classification under separate cover.			
Accomplishments/Planned Programs Subtotals	0.984	0.501	0.411

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0305103D8Z: *Cyber Security Initiative*	17.260	3.339	17.355		17.355	21.506	9.849	10.244	10.524	Continuing	Continuing

E. Acquisition Strategy

•Details provided at higher classification under separate cover.

F. Performance Metrics

•Details provided at higher classification under separate cover.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305125D8Z: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	16.449	10.486	13.008	-	13.008	12.545	12.022	12.327	10.636	Continuing	Continuing
125: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*	16.449	10.486	13.008	-	13.008	12.545	12.022	12.327	10.636	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Defense Critical Infrastructure Program (DCIP) is a Department of Defense (DOD) risk management program that seeks to ensure the availability of networked assets critical to DOD missions, to include DOD and non-DOD, domestic and foreign infrastructures essential to planning, mobilizing, deploying, executing, and sustaining United States military operations on a global basis. Through identifying Defense Critical Assets, assessing them to determine vulnerabilities, incorporating specific threat and hazard information and analysis, and visually displaying relevant infrastructure data and analysis, DOD will be positioned to make risk management decisions to ensure the appropriate infrastructure is available, when needed, to support DOD missions.

Specifically, Combatant Commands (COCOMs) are responsible for identifying the mission capability requirements and coordinating with the Military Departments, Defense Agencies, DOD Field Activities, and Defense Sector Lead Agents to identify and assess Defense Critical Assets. As asset owners and capability providers, the Secretaries of the Military Departments and the Directors of Defense Agencies and DOD Field Activities, coordinate with the COCOMs to identify and prioritize the assets required to support mission-essential functions. Asset owners will also assess identified Defense Critical Assets to identify vulnerabilities and apply appropriate remediation and mitigation measures. The Defense Sector Lead Agents are responsible for identifying the specific functions, systems, assets (DOD and non-DOD owned), and interdependencies within the Defense Sector infrastructure networks supporting the identified critical missions.

Each Defense Sector Lead Agent, as identified in DODD3020.40, represents one of ten (10) functional areas that provide support to the Combatant Commanders and asset owners. These functional areas are as follows: defense industrial base (DIB); financial services; global information grid (GIG); health affairs; intelligence, surveillance, and reconnaissance (ISR); logistics; personnel; public works; space; and transportation.

In addition, DCIP manages specific analytic efforts in the identification and maintenance of specific inter- and intra-dependencies DOD has on the foundational commercial infrastructure networks supporting the identified critical missions. Specific analytic efforts are focused within six (6) commercial infrastructure areas: energy (electric power, natural gas); chemicals; transportation; telecommunications; water; and petroleum, oil, lubricants (POL).

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0305125D8Z: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	12.725	10.486	14.608	-	14.608
Current President's Budget	16.449	10.486	13.008	-	13.008
Total Adjustments	3.724	-	-1.600	-	-1.600
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	3.724	-			
• DoD Service Support Contracts Efficiency	-	-	-0.177	-	-0.177
• OSD Studies Contracts Efficiency	-	-	-1.413	-	-1.413
• Other Program Adjustments	-	-	-0.010	-	-0.010

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: 125: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*		
Congressional Add: *Disaster Response*	4.000	-
Congressional Add Subtotals for Project: 125	4.000	-
Congressional Add Totals for all Projects	4.000	-

Change Summary Explanation

Note: FY10 total includes $4M in Congressional Adds

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305125D8Z: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*	PROJECT 125: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
125: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*	16.449	10.486	13.008	-	13.008	12.545	12.022	12.327	10.636	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Defense Critical Infrastructure Program (DCIP) is a Department of Defense (DOD) risk management program that seeks to ensure the availability of networked assets critical to DOD missions, to include DOD and non-DOD, domestic and foreign infrastructures essential to planning, mobilizing, deploying, executing, and sustaining United States military operations on a global basis. Through identifying Defense Critical Assets, assessing them to determine vulnerabilities, incorporating specific threat and hazard information and analysis, and visually displaying relevant infrastructure data and analysis, DOD will be positioned to make risk management decisions to ensure the appropriate infrastructure is available, when needed, to support DOD missions.

Specifically, Combatant Commands (COCOMs) are responsible for identifying the mission capability requirements and coordinating with the Military Departments, Defense Agencies, DOD Field Activities, and Defense Sector Lead Agents to identify and assess Defense Critical Assets. As asset owners and capability providers, the Secretaries of the Military Departments and the Directors of Defense Agencies and DOD Field Activities, coordinate with the COCOMs to identify and prioritize the assets required to support mission-essential functions. Asset owners will also assess identified Defense Critical Assets to identify vulnerabilities and apply appropriate remediation and mitigation measures. The Defense Sector Lead Agents are responsible for identifying the specific functions, systems, assets (DOD and non-DOD owned), and interdependencies within the Defense Sector infrastructure networks supporting the identified critical missions.

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In addition, DCIP manages specific analytic efforts in the identification and maintenance of specific inter- and intra-dependencies DOD has on the foundational commercial infrastructure networks supporting the identified critical missions. Specific analytic efforts are focused within six (6) commercial infrastructure areas: energy (electric power, natural gas); chemicals; transportation; telecommunications; water; and petroleum, oil, lubricants (POL).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: DCIP	12.449	10.486	13.008
FY 2010 Accomplishments: - Develop, leverage, maintain, and enhance tools and data sets based on requirements derived from the DCIP community and the output of assessments performed on Critical Assets.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305125D8Z: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*	PROJECT 125: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Continue to maintain and enhance KDAS capability and deploy on the SIPR-net -Provide technical analysis and recommendations on infrastructure networks, points of service, interdependencies, and priority restoration for pre-event and post-event analysis for manmade or natural disaster incidents, and intelligence relating to possible terrorist threats. -- Apply risk management methodology to all identified Defense Critical Assets. - Perform trend analysis and develop remediation and mitigation options for addressing risks identified as part of the assessment process ***FY 2011 Plans:*** - Develop, leverage, maintain, and enhance tools and data sets based on requirements derived from the DCIP community and the output of assessments performed on Critical Assets. - Continue to maintain and enhance KDAS capability. -Provide technical analysis and recommendations on infrastructure networks, points of service, interdependencies, and priority restoration for pre-event and post-event analysis for manmade or natural disaster incidents, and intelligence relating to possible terrorist threats. -- Apply risk management methodology to all identified Defense Critical Assets. - Perform trend analysis and develop remediation and mitigation options for addressing risks identified as part of the assessment process ***FY 2012 Plans:*** - Maintain and enhance tools and data sets based on requirements derived from the DCIP community and the output of assessments performed on Critical Assets. - Continue to maintain and enhance KDAS capability. -Provide technical analysis and recommendations on infrastructure networks, points of service, interdependencies, and priority restoration for pre-event and post-event analysis for manmade or natural disaster incidents, and intelligence relating to possible terrorist threats. -- Apply risk management methodology to all identified Defense Critical Assets. - Perform trend analysis and develop remediation and mitigation options for addressing risks identified as part of the assessment process			
Accomplishments/Planned Programs Subtotals	12.449	10.486	13.008

	FY 2010	FY 2011
Congressional Add: Disaster Response	4.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305125D8Z: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*	PROJECT 125: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*

	FY 2010	FY 2011
FY 2010 Accomplishments: The Idaho National Lab (INL) will build upon the Critical Infrastructure Protection and Resilience Simulator (CIPRsim), developed in FY08, to create a high fidelity simulation environment for risk assessments of Defense and Task Critical Assets (DCAs and TCAs). Because electrical power and communications networks are supporting foundational infrastructure to TCAs and DCAs, the focus of this effort will be to develop a high fidelity, dynamic, agent based, simulation that links electrical power, communications networks, and their control systems for specific selected assets that will afford an opportunity to apply this capability in analyzing Defense and Task Critical Assets. The final product will be suitable for use as a risk management and decision making tool, for evaluating risk mitigation and remediation options, and for wargaming scenarios involving the loss or disruption of critical systems and assets.		
Congressional Adds Subtotals	4.000	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0902198D8Z: *Critical Infrastructure Protection*	18.664	17.475	17.475		17.475	19.352	19.739	20.134		Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

DCIP uses the performance metrics documented in the DCIP Program Plan. These metrics are based on the requirements and responsibilities listed in DODD 3020.40 and DODI 3020.45.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305186D8Z: *Policy R&D Programs*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	6.813	9.136	6.603	-	6.603	6.491	6.492	6.395	4.859	Continuing	Continuing
186: *Policy R&D Programs*	6.813	9.136	6.603	-	6.603	6.491	6.492	6.395	4.859	Continuing	Continuing

A. Mission Description and Budget Item Justification

Continues the development of tools to overcome military security issues. Since the global environment is dynamic, research is necessary to continue understanding military structures, foreign cultures, and ethnic issues. Examines demographic data, investigates information awareness concerning catastrophic events, and develops links to information and data warehouses. Continues to build partnership capabilities through analytical projects that counter organizational warfare and develops infrastructure and sanctuary denial options. Blends several disciplines including surveillance, operations, policy, information, training and technology.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	6.948	9.136	9.419	-	9.419
Current President's Budget	6.813	9.136	6.603	-	6.603
Total Adjustments	-0.135	-	-2.816	-	-2.816
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-0.135	-	-2.008	-	-2.008
• Defense Efficiency – Report, Studies, Boards and Commissions	-	-	-0.808	-	-0.808

Change Summary Explanation

Programs have been streamlined by eliminating overhead in response to the Secretary's request for finding efficiencies. Further, some tasks have been downsized to meet required targets. Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of studies below the aggregate level reported in FY 2010. (FY 2011 Baseline: $3,200)

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305186D8Z: *Policy R&D Programs*	PROJECT 186: *Policy R&D Programs*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
186: *Policy R&D Programs*	6.813	9.136	6.603	-	6.603	6.491	6.492	6.395	4.859	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Continues the development of tools to overcome military security issues. Since the global environment is dynamic, research is necessary to continue understanding military structures, foreign cultures, and ethnic issues. Examines demographic data, investigates information awareness concerning catastrophic events, and develops links to information and data warehouses. Continues to build partnership capabilities through analytical projects that counter organizational warfare and develops infrastructure and sanctuary denial options. Blends several disciplines including surveillance, operations, policy, information, training and technology.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: International Technologies	2.085	3.292	2.887

Description: Identifies international technologies and provides program management oversight and technical support for projects cooperating with international partners. Anticipates exploitation of technology, including available and advanced capabilities, and works through the international commercial sector and academia concerning adversary's application of technology. Explores processes and policy to integrate international capabilities across the spectrum of international security issues.

FY 2010 Accomplishments:

• Research process tools to integrate the military in non-combative situations globally.
• Promote homeland defense initiatives with dual application worldwide in US military operations.
• Further develop ongoing research efforts within the Services and Combatant Commands to better analyze, modify, design, and demonstrate enduring counterinsurgency technical and operational capabilities.
• Develops initiatives that include broad linguistic capabilities and cultural understanding in ungoverned areas, develops international policy in lawless regions as they pertain to military operations and researches alternatives to Combatant Commands that prevent the expansion of terrorist cells into ungoverned areas.

FY 2011 Plans:

• Research process tools to integrate the military in non-combative situations globally.
• Promote homeland defense initiatives with dual application worldwide in US military operations.
• Further develop ongoing research efforts within the Services and Combatant Commands to better analyze, modify, design, and demonstrate enduring counterinsurgency technical and operational capabilities.
• Develop net-centric enterprise technologies to remove international sharing barriers identified with maritime information, intelligence, and data being collected by DoD and foreign governments

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305186D8Z: *Policy R&D Programs*	PROJECT 186: *Policy R&D Programs*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
• Research military competition among nations in the Middle East and highlight potential capabilities and policies each nation may utilize in future armed conflicts • Develop and enhance strategies and relationships with European nations based on the exchange of information through education opportunities and existing policies ***FY 2012 Plans:*** • Develop net-centric enterprise technologies to remove international sharing barriers identified with maritime information, intelligence, and data being collected by DoD and foreign governments • Research military competition among nations in the Middle East and highlight potential capabilities and policies each nation may utilize in future armed conflicts • Develop and enhance strategies and relationships with European nations based on the exchange of information through education opportunities and existing policies • Research and analyze particular Middle East countries as it relates to their decision-making process, financial position, leadership, political dynamics, technical abilities and internal social tensions and stability • Develop a regular posture planning and programming cycle that conforms to internal DoD policies			
Title: US/ Allied Strategic Partnership ***Description:*** Illustrates and depicts challenges in a US/Allied strategic area for future operations. DPSs pushes DoD toward transformation through strategic concepts and in cooperation with Joint Staff. Other participants are Military Services, Combatant Commanders, and the Defense Agencies. Guidance and approval are provided by the Deputy's Advisory Working Group (DAWG). Scenarios are applied to force planning, joint concept development activities; combat development, and joint/ interagency war games. Information from DPS analysis sets key analytic parameters, models, assumptions and variations in key factors, threat descriptions by the intelligence community; Blue and Red force characteristics, and outlines of concepts of operations. ***FY 2010 Accomplishments:*** no funding available ***FY 2011 Plans:*** no funding available ***FY 2012 Plans:*** no funding available	-	-	-
Title: Long Term Competitions (LTC) Program	2.728	3.644	2.016

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305186D8Z: *Policy R&D Programs*	PROJECT 186: *Policy R&D Programs*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This request is for support to the Long Term Competitions (LTC) program is an analytical effort chartered to provide the DoD senior leadership with an understanding of key long-term developments and dynamics in specific areas of the global security environment, and to develop competitive strategies for their consideration as the Department seeks to address these long term challenges. The LTC Program will provide rigorously analyzed competitive strategy recommendations to these senior DoD leaders, and will require the support of organizations and experts outside of government to deliver the highest quality analysis, concepts and recommendations. Funding for the LTC program will be used to: bring outside experts into Task Force working groups and strategy review teams; support wargaming and workshops; conduct analytical studies of key developments and dynamics, and their impact on the future security environment and U.S. military capabilities in that environment; and explore new approaches to addressing key analytical requirements. ***FY 2010 Accomplishments:*** Specific efforts are classified. ***FY 2011 Plans:*** Specific efforts are classified. ***FY 2012 Plans:*** Specific efforts are classified.			
Title: Defense Planning Scenarios Activities ***Description:*** This program is classified. ***FY 2010 Accomplishments:*** Specific efforts are classified. ***FY 2011 Plans:*** Specific efforts are classified. ***FY 2012 Plans:*** Specific efforts are classified.	2.000	2.200	1.700
Accomplishments/Planned Programs Subtotals	6.813	9.136	6.603

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0305186D8Z: *Policy R&D Programs*	**PROJECT** 186: *Policy R&D Programs*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*				R-1 ITEM NOMENCLATURE PE 0305199D8Z: *Net Centricity*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	1.425	29.831	14.926	-	14.926	24.806	25.592	26.083	18.556	Continuing	Continuing
199: *GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities*	1.425	29.831	14.926	-	14.926	24.806	25.592	26.083	18.556	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program element provides systems engineering and technical analysis of the DoD Information Technology (IT) portfolio containing over 600 programs valued at over $180B. The Primary Staff Assistant advises OSD leadership on end to end warfighter communication capabilities to include portfolio management, developmental support responsibilities on numerous programs, synchronization, and interoperability efforts and issues. Emphasis is placed on the information transport, information assurance, net and spectrum management, command and control (C2), space, and enterprise services activities focused on the development, integration, testing and technical assessment of capabilities and applications in joint and coalition warfighter support environments. Resources support collaborative efforts to demonstrate the interoperability and performance requirements of acquisition programs. The PSA develops portfolio-wide guidance and provides technical analysis to enable the warfighter, intelligence, and business communities to meet their respective mission requirements. This program is funded under Budget Activity 7, Operational System Development, and it supports system definition, development, testing, and program analysis of major acquisition programs engineering development and synchronization activities.

This project provides the resources necessary for the Deputy of the Assistant Secretary of Defense for Communication, C2, Space, and Spectrum to implement net centric processes and authoritative analytical methods that provide the capability to synchronize interdependent capabilities across all layers (ground, air, space) of the net-centric architecture, to forecast and achieve a balance in supply and demand for network capacity, and field net centric capabilities more rapidly as an enabler for C2 capabilities and applications. Resources are required to transform current networks into an operationally unified and architecturally diverse joint network that will provide end-to-end communications transport layer capabilities that are optimized and integrated with all other joint capability areas with a focus on the tactical edge faced with disconnected, intermittent, and latency (DIL) environments. There will be technical assessments, modeling and simulation, and analysis of the Joint space communications layer, Joint aerial network layer, and contested communications on the move capabilities. These funds develop the capability for the warfighter to manage and deconflict radio frequencies through ground, air, and space communication networks. The funds will be used to develop and synchronize information assurance capabilities with other net centric capabilities to provide secure access to information and services (e.g. Cryptographic Modernization Management plan).

Note that FY10/11 funding disconnect resulted from duplicate cuts to a program titled Horizontal Fusion (HF) formerly part of this PE to support priority net centric transformation.. These cuts not only zeroed out the HF funding but also cut deeply into the GIG Evaluation Facility and GIG End-to-End Systems Engineering Activities in FY2010.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305199D8Z: *Net Centricity*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	1.467	29.831	30.434	-	30.434
Current President's Budget	1.425	29.831	14.926	-	14.926
Total Adjustments	-0.042	-	-15.508	-	-15.508
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.042	-	-	-	-
• OSD Studies Contracts Efficiency	-	-	-2.407	-	-2.407
• DoD Service Support Contracts Efficiency	-	-	-1.581	-	-1.581
• Economic Assumptions	-	-	-0.018	-	-0.018
• NII Contractor Efficiency	-	-	-1.502	-	-1.502
• Net Centricity Efficiency	-	-	-10.000	-	-10.000

Change Summary Explanation

FY 2010: Program adjustment -0.042 million.

FY 2011: No change.

FY 2012: Economic Assumptions -0.018 million, OSD Study contracts efficiency -2.407 million, NII Contractor efficiencies -1.502 million, DoD Service Support Contracts efficiency -1.581 million, Net Centric efficiency -10.000 million.

Studies contract Efficiencies will be realized by reducing the number of studies that we participate in while still supporting enterprise-wide information technology goals critical to DoD Mission.

Service Support Contract efficiencies will be realized by reducing the reliance on DoD Service Support Contractors by utilizing in-house government support in a constrained personnel and resource environment.

NII reduction to contractor staff efficiencies will be realized by continuing to provide policy, guidance, program oversight, and resource management for command and control (C2), communications, spectrum, information assurance, and Information Technology programs with significantly less contractor support.

Economic Assumptions will be realized by reducing our reliance on contractors while still achieving OASD(NII)/DoD CIO goals and objectives while in a constrained personnel and resource environment.

Net-Centric efficiency will be realized by reducing the number of studies that we participate in while still supporting net-centric goals critical to DoD Mission.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0305199D8Z: *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Net Centricity Plans and Accomplishments	1.425	29.831	14.926
FY 2010 Accomplishments: – Evolved DoD Policy to support effective governance to implement an interoperable GIG infrastructure – Completed development of EW SE Roadmap and implementation plan – Evolved the GIG compliance effort through continued participation in the GIG Technical Guidance (GTG) Configuration Management Board (GTG CMB) and inputs to technical review – Evolved the GIG Technical Guidance to include developing additional GIG Enterprise Technical Profiles (GTPs) in the areas of enterprise services and network management at the tactical edge – Completed development of Scenario PET (SPET) and User Guide			
FY 2011 Plans: – Lead pre-Milestone A developmental planning by selecting and developing solution sets in the space, aerial, and ground domain (e.g. Joint space communications layer, Joint aerial network layer, Joint terrestrial network layer, and contested communications on the move capabilities.) – Design the integrated master schedule to analyze portfolio capability schedules and dependencies between programs to capture critical programmatic operational and developmental dependencies – Develop a tactical radio strategy to meet the demand of the Combined Joint Force (CJF) Commander – Revise the Waveform Roadmap that provides a chronology of tactical communications waveforms and captures delivery of new approved waveforms as well as disestablishment/migration of existing and legacy waveforms – Develop DoD SATCOM roadmaps (narrowband, wideband, and protected) including MILSTAR, AEHF, terminals, gateways, and waveforms – Define current network connectivity, capacity, capability gaps, and potential solutions (space, air, terrestrial) in the Combined Joint Operational Area (CJOA) to meet the demands of the warfighter – Define technical and operational baselines, develop analytical tools and provide analysis and engineering documentation in sufficient detail to support fiscal decision making for SATCOM programs such as MUOS, Teleports, WGS, terminals, and gateways – Provide Crypto Modernization by developing the Crypto Modernization Management Charter – Develop synchronization plans for ground support systems, ground terminals and interfaces to other components within the GIG by capturing up to date changes on the numerous interdependent programs – Perform systems engineering for technical baseline compliance, information assurance, and tactical networking using the Quantifiable Capability Delivery Increment (QCDI) updates. – Provide specific engineering and analysis to ensure communications programs are complying with Department net-centric guidance through forums such as the Narrowband SATCOM Systems Engineering Group.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305199D8Z: *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Develop the COCOMs' C4 architecture and evaluate and develop end-to-end tactical network management systems – Establish Afghan Mission Network transport requirements; define battlespace functions; decrease/minimize demand of and capacity allocated to multiple network environments – Test the network and enterprise technical integration at the wireless tactical edge which is faced with DIL environments. – Define interoperability net centric gaps to be filled by technology. Determine appropriate technology and operational impacts. – Perform legacy waveform migration analysis to select optimum waveforms for warfighter interoperability and DoD cost reduction; conduct dynamic spectrum performance modeling and threat assessment to determine appropriate application within DoD networks; create plan for investments into new, more efficient, more flexible waveforms to ensure interoperability and performance standards within DoD are met – Develop capability to effectively measure and monitor defense programs' bandwidth requirements to ensure that bandwidth needed to support such programs will be met and determine how they will be met – Conduct engineering analysis and develop solutions to enable spectrum resource integration and optimization of electromagnetic systems (including sensors, networks, and electronic warfare) that use spectrum resources in the tactical environment – Develop a plan for GIG enterprise-wide spectrum demand analysis that provides a superior capability to conduct net-centric operations; review and evaluate domestic and global spectrum regulatory trends that might inhibit the DoD's ability to complete its warfighting mission; collect and analyze system spectrum data for current and project acquisition efforts (FY 2009-2014) for 300MHz – 3.5 GHz and 3.5 GHz – 6 GHz bands – Develop engineering solutions for space support (launch, satellite operations, weather, PNT, and space control) – Conduct technical analysis on spectrally efficient technologies, sharing techniques, and regulatory alternatives to increase efficient use of spectrum to maximize its effectiveness and ensure timely delivery to the warfighter – Evolve data interoperability standards to promote interoperability in the GIG Technical Guidance (GTG) – Develop GTG implementation standards for Universal Core (UCore)/C2 Core – Develop and pilot methods and measures for exposure and utilization of authoritative data sources – Perform technical assessment of scalability and usability of services oriented C2 applications in disconnected, intermittent, and low bandwidth environment for tactical users. – Assess foundational technical standards for implementing C2 applications in services oriented environment – Develop a specification to support HAIPE Peer Discovery in the tactical environment – Develop GIG Technical Guidance artifacts to enable seamless interoperability between NECC and several supporting Programs such as NCES, PKI, CDS, and JEDS			
FY 2012 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305199D8Z: *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Provide pre-Milestone A technical assessment for "Developmental Planning" to ensure selection and development of solutions that are interoperable across the strategic and tactical boundaries in regards to Joint space communications layer, Joint aerial network layer, and contested communications on the move capabilities – Execute the tactical radio fielding plan. – Build waveform roadmaps that provide a chronology of tactical communications waveforms and captures delivery of new approved waveforms as well as disestablishment/migration of existing/legacy waveforms – Define current network capacity, capability gaps and potential solutions (space, air, terrestrial) in the Combined Joint Operational Area (CJOA) to meet the demand of the Combined Joint Force (CJF) Commander. – Develop engineering solutions for space support (launch, satellite operations, weather, PNT, and space control) – Design synchronization plan for ground support systems, ground terminals and interfaces to other components within the GIG by capturing up to date changes on the numerous interdependent programs – Perform systems engineering for technical baseline compliance, information assurance, and tactical networking – Develop DoD Narrowband SATCOM roadmap including MUOS, legacy, Teleports, and terminals. – Develop DoD Protected SATCOM roadmap including MILSTAR, AEHF, terminals, gateways, and waveforms. – Develop a Crypto modernization migration strategy for Nuclear and general force C2 systems. – Establish Afghan Mission Network transport requirements; define battlespace functions; decrease/minimize demand of and capacity allocated to multiple network environments – Determine appropriate technology and operational impacts to close identified gaps. Acquire, test and implement technology – Define technical and operational baselines, enhance analytical tools and provide additional analysis and engineering documentation in sufficient detail to support fiscal decision making – Develop Integrated Master Schedule for Nuclear C2 Systems – Develop a plan and methodology for GIG enterprise-wide spectrum demand analysis for conducting net-centric operations – Define programmatic changes within space programs to improve net-centric capabilities and information assurance requirements – Assess DoD capability improvements as integration with commercial capability providers – Engineer network management (NM) technical solutions to share NM data and execute control through all levels of DoD networks – Perform waveform migration analysis to select optimum waveforms for warfighter interoperability and DoD cost reduction – Assess the capability to effectively measure and monitor defense programs' bandwidth requirements to ensure that bandwidth needed to support such programs will be met and a determination of how they will be met – Provide technical solutions to integrate spectrum resources and optimize electromagnetic systems that use spectrum resources in the tactical environment			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305199D8Z: *Net Centricity*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
– Produce GIG enterprise-wide spectrum demand analysis that provides a superior capability to conduct net-centric operations; review and evaluate domestic and global spectrum regulatory trends that might inhibit the DoD's ability to complete its warfighting mission; collect and analyze system spectrum data for current and project acquisition efforts (FY 2009-2014) for 300MHz – 3.5 GHz and 3.5 GHz – 6 GHz bands – Execute technical analysis on spectrally efficient technologies, sharing techniques, and regulatory alternatives to increase efficient use of spectrum technologies – Develop mechanisms for the marking and release of information to coalition partners to inform policy recommendations – Assess the services infrastructure requirements (and limitations) of implementing C2 functional services to operate from the tactical edge			
Accomplishments/Planned Programs Subtotals	1.425	29.831	14.926

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

User Activity and Participation - A key measurement of GIG-EF success is the amount of user/program participation and usage of the GIG-EF in support of Joint warfighting requirements.

- Contributions to GIG development and transition.
- Demonstrations in support of GIG overall goals.
- Number of GIG Enterprise-Wide Systems Engineering Oversight working group requirements addressed.
- Tangible products such as frameworks and design guidance used for program assessments and reviews.
- Streamlined business processes for documenting GIG enterprise-wide technical guidance.
- Prioritized listing of enterprise-wide technical issues.
- Technical solutions to enterprise interoperability and performance issues.
- Specific modifications to Programs based on the frameworks and guidance that improve program compatibility and end-to-end performance.
- A more collaborative environment where systems engineering organizations of individual GIG programs and the enterprise-wide systems engineering oversight organization mutually identify and solve issues related to maximizing end to end performance.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305387D8Z: *Homeland Defense Technology Transfer Program*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	2.921	2.988	2.660	-	2.660	2.676	2.733	2.797	2.834	Continuing	Continuing
387: *Homeland Defense Technology Transfer Program*	2.921	2.988	2.660	-	2.660	2.676	2.733	2.797	2.834	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Continues Congressionally directed Technology Transfer Program to consolidate and coordinate various military endeavors that pass technology and equipment to first responders.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	2.963	2.988	2.988	-	2.988
Current President's Budget	2.921	2.988	2.660	-	2.660
Total Adjustments	-0.042	-	-0.328	-	-0.328
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-0.042	-	-0.003	-	-0.003
• Service Support Contract Efficiency	-	-	-0.325	-	-0.325

Change Summary Explanation

Defense Efficiency-Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in FY 2010. (FY 2011 Baseline $2.423M). FY 12 reflects the reduction is Service Support Contracts.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Homeland Defense Technology Transfer Program	2.921	2.988	2.660
Description: Provided outreach through coordination and cooperation with inter-agency partners to provide dual-use technology and equipment to first responders. Ensured DoD components conducted Technology Transfer programs that are appropriate for			

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0305387D8Z: *Homeland Defense Technology Transfer Program*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
the respective component. Provided information to stakeholders on equipment and technology use and availability. Funding was previously in PE 0305186D8Z. ***FY 2010 Accomplishments:*** • Use metrics as tools for measurement of program success. • Conducted the technology transfer program in a consolidated environment. • Used a consortium of subject matter experts/governance council to prioritize technology transfer requirements. • Continued program outreach programs, identifying potential opportunities for expansion. • Implemented a transfer process. ***FY 2011 Plans:*** • Continue conducting the technology transfer program in a consolidated environment. • Finalize metrics for continued use in program success. • Use a consortium of subject matter experts/governance council to prioritize technology transfer requirements. • Continue program outreach programs; prioritize outreach needs to reflect efficiencies. • Refine transfer process. ***FY 2012 Plans:*** • Review program for DoD increased efficiencies. • Use a consortium of subject matter experts/governance council to prioritize technology transfer requirements. • Continue program outreach programs, prioritize outreach to reflect efficiencies.			
Accomplishments/Planned Programs Subtotals	2.921	2.988	2.660

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305600D8Z: *International Intelligence Technology and Architectures*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	1.376	1.416	1.444	-	1.444	1.473	1.519	1.558	1.602	Continuing	Continuing
997: *International Intelligence Technology and Architectures*	1.376	1.416	1.444	-	1.444	1.473	1.519	1.558	1.602	Continuing	Continuing

A. Mission Description and Budget Item Justification

Provides for the identification, migration and integration of existing and advanced multinational and bi-lateral international intelligence information cloud based advanced analytics, algorithmic and data fusion technologies into an integrated US, NATO, and coalition based intelligence service oriented architecture / data repository such as the U.S. and NATO Battlefield Information Collection and Exploitation System(s) (BICES). Provides for rapid implementation of U.S. BICES capabilities into the Distributed Common Ground/Surface System-Army and the Defense Intelligence Information Enterprise (DI2E) intelligence based decision applications and data mechanisms in support of Under Secretary of Defense (Intelligence)'s mission to ensure necessary intelligence information is being acquired, analyzed, and disseminated rapidly amongst our allies and coalition partners. Develop Cloud capabilities for US BICES.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	1.378	1.416	1.446	-	1.446
Current President's Budget	1.376	1.416	1.444	-	1.444
Total Adjustments	-0.002	-	-0.002	-	-0.002
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department adjustment	-0.002	-	-0.002	-	-0.002

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305600D8Z: *International Intelligence Technology and Architectures*	PROJECT 997: *International Intelligence Technology and Architectures*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
997: *International Intelligence Technology and Architectures*	1.376	1.416	1.444	-	1.444	1.473	1.519	1.558	1.602	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Provides for the migration and integration of existing and advanced multinational and bi-lateral international intelligence information cloud based advanced analytics, algorithmic and data fusion technologies into an integrated US, NATO, and coalition based intelligence service oriented architecture / data repository such as the U.S. and NATO Battlefield Information Collection and Exploitation System(s). Provides for rapid implementation of U.S. BICES capabilities into the Distributed Common Ground System-Army and the Defense Intelligence Information Enterprise (DI2E) intelligence based decision applications and data mechanisms in support of USD(I)'s mission to ensure necessary intelligence information is being acquired, analyzed, and disseminated rapidly amongst our allies and coalition partners. Develop Cloud capabilities for US BICES.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: International Intelligence Technology and Architectures	1.376	1.416	1.444	-	1.444
FY 2010 Accomplishments: Identified and captured existing USPACOM and USEUCOM intelligence data fusion applications for integration into the U.S. and coalition architectures.					
FY 2011 Plans: Develop widget based advanced analytics applications to transfer data utilizing developing metadata structures and cloud technology into existing U.S., NATO, and coalition networks supporting on-going operations in support of counter-terrorism. Develop processes for incorporating Multi-National Information Sharing (MNIS) functional capabilities.					
FY 2012 Base Plans: Develop applications and architectures to incorporate multi-level security (Oracle Trusted Cross Domain Systems) capabilities for bi-lateral and multi-lateral data dissemination and discovery fusion techniques into existing U.S., NATO, and coalition networks supporting on-going SOF and conventional operational intelligence needs. Develop Cloud capabilities for US BICES. Continue US BICES application integration.					
Accomplishments/Planned Programs Subtotals	1.376	1.416	1.444	-	1.444

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0305600D8Z: *International Intelligence Technology and Architectures*	**PROJECT** 997: *International Intelligence Technology and Architectures*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0305600D8Z Proc DW: *International Intelligence Technology and Architectures*	20.639	35.136	20.176	8.300	28.476	19.393	18.910	18.488	17.571	Continuing	Continuing
• 0305600D8Z O&M DW: *International Intelligence Technology and Architectures*	11.519	80.643	80.548	48.750	129.298	80.638	80.201	79.254	80.577	Continuing	Continuing

D. Acquisition Strategy

Performance will be monitored on a monthly basis via Program Reviews, Current Expenditures, Estimated Future Expenditures, and Cost/Schedule Adherence. R&D will provide increased intelligence fusion capabilities in support of US and coalition forces utilizing the US BICES and NATO cloud based networks within the Afghanistan theater and provide increased database information via a DCGS-A like architecture. Provides an increase in intelligence disciplines (IMINT, SIGINT, and potential HUMINT) in support of US and Allied/Coalition forces that currently is very limited to the war fighter. Increased intelligence advanced analytics tools will be migrated from JIOC-IT and DIIE developments and will significantly increase the timeliness of intelligence and bring US BICES/NSCC/IFC capabilities into the current technology baselines.

E. Performance Metrics

Assessment and Analysis - Can easily be adapted or adjusted to meet the current or projected capabilities gap for Allied or Coalition Intelligence Information Sharing.
Realism – Allows exploration of new environments and capabilities
Advancement - Increases the current capabilities for the sharing of intelligence information and determine if it actually adds functionality in support of Combatant Commanders requirements.
Utility - Can be integrated into the existing national or multinational architectures in a timely and cost effective manner and does it increase the discovery and dissemination of intelligence information to the Allies or Coalition forces.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305600D8Z: *International Intelligence Technology and Architectures*	PROJECT 997: *International Intelligence Technology and Architectures*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Multi-Level Security	SS/CPFF	Hill Air Force Base:Utah	1.000	0.700	Aug 2011	0.500	Aug 2012	-		0.500	1.500	3.700	4.000
US BICES Cloud Computing	SS/CPFF	Hill Air Force Base:Utah	-	0.300	Jun 2011	0.500	Jun 2012	-		0.500	0.500	1.300	3.000
US BICES Application Integration	SS/CPFF	Hill Air Force Base:Utah	0.376	0.416	Jun 2011	0.444		-		0.444	Continuing	Continuing	
		Subtotal	1.376	1.416		1.444		-		1.444			

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.376	1.416		1.444		-		1.444			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0305600D8Z: *International Intelligence Technology and Architectures*	**PROJECT** 997: *International Intelligence Technology and Architectures*

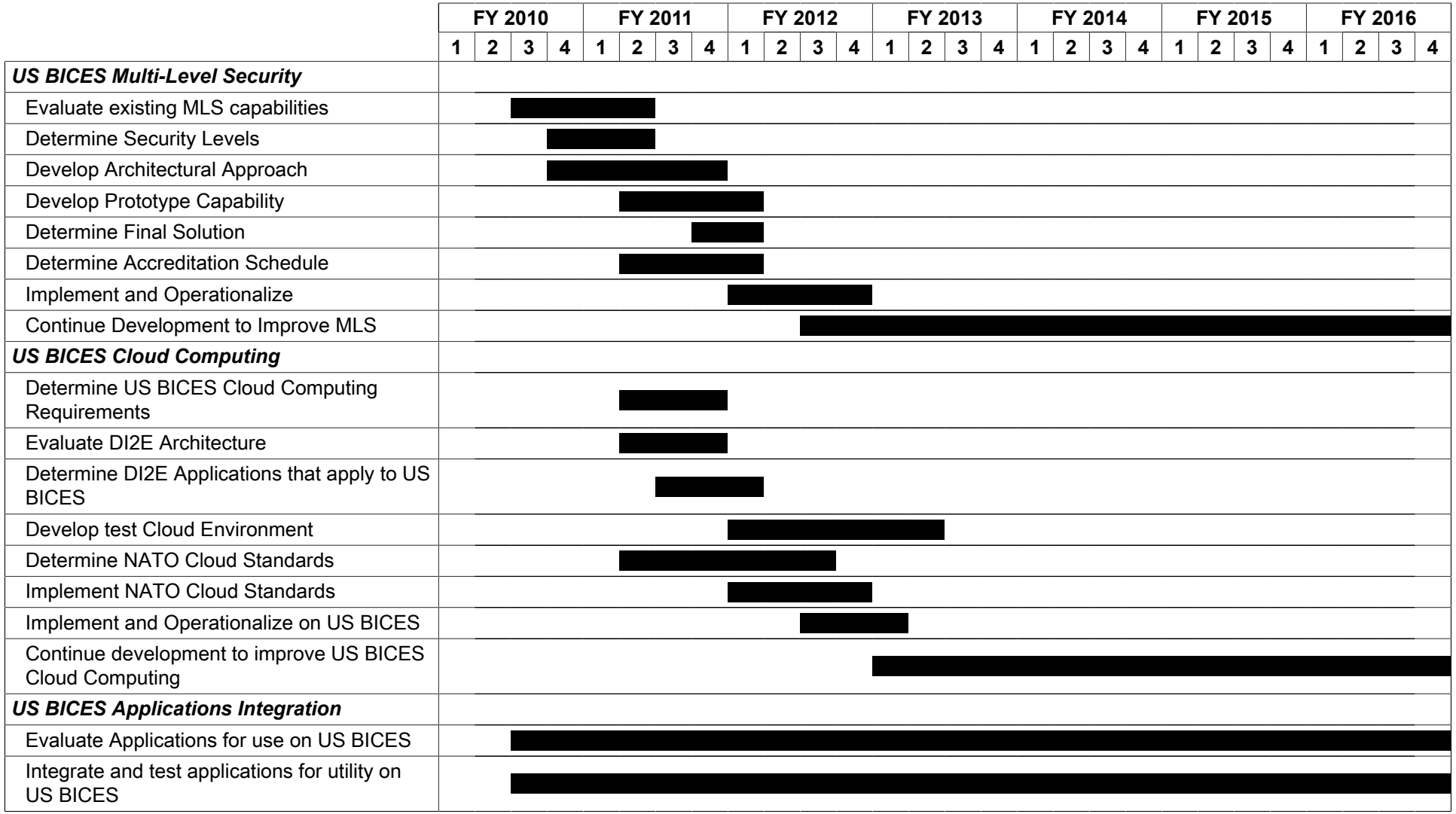

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0305600D8Z: *International Intelligence Technology and Architectures*	**PROJECT** 997: *International Intelligence Technology and Architectures*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
US BICES Multi-Level Security				
Evaluate existing MLS capabilities	3	2010	2	2011
Determine Security Levels	4	2010	2	2011
Develop Architectural Approach	4	2010	4	2011
Develop Prototype Capability	2	2011	1	2012
Determine Final Solution	4	2011	1	2012
Determine Accreditation Schedule	2	2011	1	2012
Implement and Operationalize	1	2012	4	2012
Continue Development to Improve MLS	3	2012	4	2016
US BICES Cloud Computing				
Determine US BICES Cloud Computing Requirements	2	2011	4	2011
Evaluate DI2E Architecture	2	2011	4	2011
Determine DI2E Applications that apply to US BICES	3	2011	1	2012
Develop test Cloud Environment	1	2012	2	2013
Determine NATO Cloud Standards	2	2011	3	2012
Implement NATO Cloud Standards	1	2012	4	2012
Implement and Operationalize on US BICES	3	2012	1	2013
Continue development to improve US BICES Cloud Computing	1	2013	4	2016
US BICES Applications Integration				
Evaluate Applications for use on US BICES	3	2010	4	2016
Integrate and test applications for utility on US BICES	3	2010	4	2016

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*				R-1 ITEM NOMENCLATURE PE 1001018D8Z: *NATO AGS*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	66.057	93.885	-	-	-	-	-	-	-	Continuing	Continuing
P018: *NATO AGS*	66.057	93.885	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

(U) This project is the U.S. share of the cost for NATO to acquire a ground surveillance capability based on the U.S. Global Hawk Block 40 Unmanned Aircraft System (UAS).

(U) The North Atlantic Council (NAC) validated the requirement in 1995 for a NATO-owned and operated core air-to-ground surveillance capability supplemented by interoperable national assets. Since then, the Major NATO Commanders have consistently made Alliance Ground Surveillance (AGS) their number one equipment acquisition priority.

- October 1997, NATO Conference of National Armaments Directors (CNAD) approved AGS NATO Staff Requirement (NSR)
- April 1999, NATO Washington Summit Defense Capabilities Initiatives (DCI) included need for a NATO-owned and operated core system for ground surveillance.
- September 2001, Reinforced NAC (RNAC) re-affirmed need for a NATO-owned and operated AGS capability by 2010 and to move forward with the program.
- November 2002, NATO Prague Summit approved Prague Capabilities Commitment (PCC) that includes an airborne ground surveillance capability.
- December 2003, AGS Steering Committee approved, in principle, the merger of NATO AGS and the Trans-Atlantic Cooperative AGS Radar (TCAR) sensor projects.
- May 2004, Following a competitive Project Definition Study, CNAD endorsed the Trans-Atlantic Industrial Proposed Solution (TIPS) consortium's selection as the program of record to enter the Design and Development Phase and directed that the TCAR sensor development project be integrated into the AGS program.
- November 2005, Risk Reduction Study (RRS) was completed, providing the Nations a higher degree of confidence in six areas of concern: program management; harmonization with other pending NATO aircraft programs; interoperability with existing national systems; compatibility with the NATO intelligence, surveillance and reconnaissance architecture; integration of the TCAR sensor; and affordability.
- April 2006, CNAD approved release of a Request for Proposal (RFP) to industry for the Design and Development (D&D) phase, including a mixed fleet (manned and unmanned) and development of at least one radar for either, with a total procurement Not to Exceed of €3.3B (Base Year Euros equivalent to $5.4B Then Year dollars).
- October 2006, AGS Industries (AGSI, former TIPS consortium) formally submitted a proposal compliant with the RFP. CNAD agreed that the proposal, as submitted by AGSI, would form the basis for negotiations of the D&D contract and tasked the AGS Support Staff (AGS3) to begin negotiations with AGSI.
- May 2007, Contract negotiations with AGSI were completed. Total value of the D&D contract was €545M (Then Year Euros equivalent to $763M Then Year dollars) for the system design activity (to be funded by all participating nations) plus €385M (Then Year Euros equivalent to $539M Then Year dollars) for the radar development activity (to be funded by six nations, including the U.S.). The period of performance was 31 months after award and the contract prices were valid until December 1, 2007.
- June 2007, The AGS Funding Documents (Program Memorandum of Understanding (PMOU), Design & Development Supplement, and the TCAR Implementing Arrangement (IA)) were released to nations for final staffing, leading to their approval and signature.
- July 2007, At an Extra-ordinary CSC meeting, Canada, France, Germany, and The Netherlands indicated they could not support the Program of Record due to affordability. The CSC recommended ceasing work on the Program of Record in favor of a UAV only capability based on an Off-The-Shelf Global Hawk (OTS-GH) equipped with the U.S. Multi-Platform Radar Insertion Program (MP-RTIP) sensor. This capability was previously endorsed by the user, Supreme Headquarters Allied Command Europe (SHAPE).

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 1001018D8Z: *NATO AGS*

- September 2007, CSC directed AGS3 to revise the procurement strategy and update the funding documents and the NATO Management Organization Charter for the re-structured program.
- June 2008, NATO AGS Programme Memorandum of Understanding released for national staffing.
- October 2008, Request for Proposal for NATO AGS prime development contract released to industry.
- September 3, 2009, PMOU in effect; Charter for NATO AGS Management Organization (NAGSMO) in effect.
- October 2009 through September 2010 discussions with industry on prime contract scope and deliverables

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	74.485	93.885	83.182	-	83.182
Current President's Budget	66.057	93.885	-	-	-
Total Adjustments	-8.428	-	-83.182	-	-83.182
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.086	-			
• Other Program Adjustments	-6.342	-	-	-	-
• Program Transfer to the Air Force	-	-	-83.182	-	-83.182

Change Summary Explanation

The NATO AGS program transfers to the Air Force in FY2012. This will consolidate program execution and management oversight at the Service level.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 1001018D8Z: *NATO AGS*	PROJECT P018: *NATO AGS*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P018: *NATO AGS*	66.057	93.885	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 1001018D8Z: *NATO AGS*	PROJECT P018: *NATO AGS*

- September 2007, CSC directed AGS3 to revise the procurement strategy and update the funding documents and the NATO Management Organization Charter for the re-structured program.
- June 2008, NATO AGS Programme Memorandum of Understanding released for national staffing.
- October 2008, Request for Proposal for NATO AGS prime development contract released to industry.
- September 3, 2009, PMOU in effect; Charter for NATO AGS Management Organization (NAGSMO) in effect.
- October 2009 through September 2010 discussions with industry on prime contract scope and deliverables.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: NATO AGS	66.057	93.885	-
FY 2010 Accomplishments: - Continued manning NATO AGS Management Agency (NAGSMA) to accomplish acquisition program. - Provided clarifications on Request for Proposal requirements to industry. - Discussions with industry on proposal for NATO AGS prime contract			
FY 2011 Plans: - Award prime contract for NATO AGS development and production. - Conduct an Integrated Baseline Review of the prime contract. - Implement Global Hawk mission security updates. - Participate in technical and operational Working Groups including NATO AGS airworthiness certification. - Investigate approaches to ensure U.S. Global Hawk interoperability with NATO AGS. - Oversee acquisition programmed by participation in NAGSMO Board of Directors.			
FY 2012 Plans: NATO AGS PE will be transferred to the US Air Force in FY2012 and beyond.			
Accomplishments/Planned Programs Subtotals	66.057	93.885	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The U.S. signed a multi-national Program Memorandum of Understanding (PMOU) committing the U.S. government to NATO-derived cost shares of the AGS prime contract consisting of a Design, Development & Demonstration and Production of the NATO AGS system. The NATO AGS procurement strategy is consistent with NATO AGS PMOU provisions and includes award of a fixed price contract to the Northrop Grumman Corporation prime contractor.

E. Performance Metrics

Not applicable for this item.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 1001018D8Z: *NATO AGS*	PROJECT P018: *NATO AGS*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NATO AGS PMOU/Prime Contract	SS/FFP	NORTHROP GRUMMAN CORPORATION:MELBOURNE, FL	66.300	30.000	Sep 2011	-		-		-	0.000	96.300	
NATO AGS MISSION SECURITY	SS/CPAF	NORTHROP GRUMMAN CORPORATION:MELBOURNE, FL	7.532	53.434	Sep 2011	-		-		-	0.000	60.966	
NATO AGS INTEROPERABILITY	SS/TBD	U.S. AIR FORCE:HANSCOM AFB, MA	2.100	-	Sep 2011	-		-		-	0.000	2.100	
NATO AGS MARITIME MODES	SS/CPAF	NORTHROP GRUMMAN CORPORATION:MELBOURNE, FL	5.500	5.000	Mar 2011	-		-		-	0.000	10.500	
		Subtotal	81.432	88.434		-		-		-	0.000	169.866	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NATO AGS MANAGEMENT SUPPORT	C/CPFF	U.S. AIR FORCE:DAYTON, OH	7.825	5.451	Sep 2011	-		-		-	0.000	13.276	
		Subtotal	7.825	5.451		-		-		-	0.000	13.276	

	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	89.257	93.885		-		-		-	0.000	183.142	

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 1001018D8Z: *NATO AGS*	PROJECT P018: *NATO AGS*

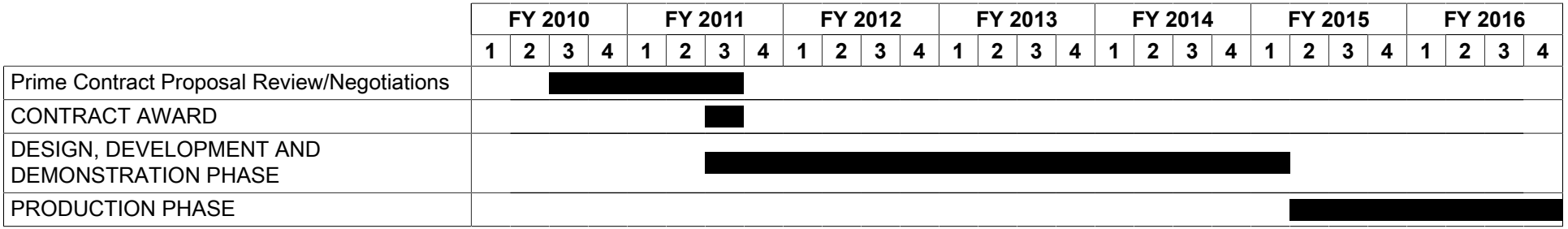

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 1001018D8Z: *NATO AGS*	**PROJECT** P018: *NATO AGS*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Prime Contract Proposal Review/Negotiations	3	2010	3	2011
CONTRACT AWARD	3	2011	3	2011
DESIGN, DEVELOPMENT AND DEMONSTRATION PHASE	3	2011	1	2015
PRODUCTION PHASE	2	2015	4	2016

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