Department of Defense
Fiscal Year (FY) 2013 President's Budget Submission

February 2012

Office of Secretary Of Defense

Justification Book Volume 3

Research, Development, Test & Evaluation, Defense-Wide

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Volumes

Volume 3 Table of Contents

THIS PAGE INTENTIONALLY LEFT BLANK

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2011 Actuals	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Sec
3	0601110D8Z	Basic Research Initiatives	01		7,482		7,482	U
5	0601120D8Z	National Defense Education Program	01	90,696	83,577		83,577	U
		Basic Research		90,696	91,059		91,059	
7	0602000D8Z	Joint Munitions Technology	02	19,917	20,328		20,328	U
9	0602228D8Z	Historically Black Colleges and Universities (HBCU) Science	02	22,678				U
10	0602234D8Z	Lincoln Laboratory Research Program	02	31,004	36,608		36,608	U
11	0602250D8Z	Systems 2020 Applied Research	02					U
17	0602663D8Z	Data to Decisions Applied Research	02		4,128		4,128	U
18	0602668D8Z	Cyber Security Research	02	4,538	4,581		4,581	U
19	0602670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Applied Research	02	7,199	8,602		8,602	U
		Applied Research		85,336	74,247		74,247	
25	0603000D8Z	Joint Munitions Advanced Technology	03	14,343	15,606		15,606	U
26	0603121D8Z	SO/LIC Advanced Development	03	43,525	44,199		44,199	U
27	0603122D8Z	Combating Terrorism Technology Support	03	90,211	74,586		74,586	U
30	0603200D8Z	Joint Advanced Concepts	03	6,585	6,571		6,571	U
31	0603225D8Z	Joint DoD-DoE Munitions Technology Development	03	21,731	19,651		19,651	U
37	0603618D8Z	Joint Electronic Advanced Technology	03	22,716	7,112		7,112	U
38	0603648D8Z	Joint Capability Technology Demonstrations	03	185,591	171,807		171,807	U
39	0603662D8Z	Networked Communications Capabilities	03	28,032	23,185		23,185	U
40	0603663D8Z	Data to Decisions Advanced Technology Development	03	3,888	4,117		4,117	U
41	0603665D8Z	Biometrics Science and Technology	03	10,847	10,406		10,406	U

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2013 Base	FY 2013 OCO	FY 2013 Total	Sec
3	0601110D8Z	Basic Research Initiatives	01	19,405		19,405	U
5	0601120D8Z	National Defense Education Program	01	87,979		87,979	U
		Basic Research		107,384		107,384	
7	0602000D8Z	Joint Munitions Technology	02	20,615		20,615	U
9	0602228D8Z	Historically Black Colleges and Universities (HBCU) Science	02				U
10	0602234D8Z	Lincoln Laboratory Research Program	02	36,826		36,826	U
11	0602250D8Z	Systems 2020 Applied Research	02	7,898		7,898	U
17	0602663D8Z	Data to Decisions Applied Research	02	13,753		13,753	U
18	0602668D8Z	Cyber Security Research	02	18,985		18,985	U
19	0602670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Applied Research	02	6,771		6,771	U
		Applied Research		104,848		104,848	
25	0603000D8Z	Joint Munitions Advanced Technology	03	25,612		25,612	U
26	0603121D8Z	SO/LIC Advanced Development	03	26,324		26,324	U
27	0603122D8Z	Combating Terrorism Technology Support	03	77,144		77,144	U
30	0603200D8Z	Joint Advanced Concepts	03				U
31	0603225D8Z	Joint DoD-DoE Munitions Technology Development	03	20,032		20,032	U
37	0603618D8Z	Joint Electronic Advanced Technology	03	6,983		6,983	U
38	0603648D8Z	Joint Capability Technology Demonstrations	03	158,263		158,263	U
39	0603662D8Z	Networked Communications Capabilities	03	25,393		25,393	U
40	0603663D8Z	Data to Decisions Advanced Technology Development	03	13,754		13,754	U
41	0603665D8Z	Biometrics Science and Technology	03				U

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2011 Actuals	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Sec
42	0603668D8Z	Cyber Security Advanced Research	03	4,847	5,539		5,539	U
43	0603670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Advanced Development	03	10,299	12,724		12,724	U
44	0603680D8Z	Defense-Wide Manufacturing Science and Technology Program	03	41,388	46,277		46,277	U
45	0603699D8Z	Emerging Capabilities Technology Development	03		26,160		26,160	U
46	0603711D8Z	Joint Robotics Program/Autonomous Systems	03	9,567	9,516		9,516	U
49	0603716D8Z	Strategic Environmental Research Program	03	59,152	64,565		64,565	U
51	0603727D8Z	Joint Warfighting Program	03	10,710	10,310		10,310	U
53	0603755D8Z	High Performance Computing Modernization Program	03	235,209				U
59	0603781D8Z	Software Engineering Institute	03	29,291	29,347		29,347	U
60	0603826D8Z	Quick Reaction Special Projects	03	58,763	58,970		58,970	U
61	0603828D8Z	Joint Experimentation	03	87,800	38,112		38,112	U
63	0603832D8Z	DoD Modeling and Simulation Management Office	03	33,114	29,977		29,977	U
66	0603941D8Z	Test & Evaluation Science & Technology	03	94,640	96,652		96,652	U
67	0603942D8Z	Technology Transfer	03	19,842				U
68	0604055D8Z	Operational Energy Capability Improvement	03		19,925		19,925	U
69	0303310D8Z	CWMD Systems	03		4,140		4,140	U
		Advanced Technology Development (ATD)		1,122,091	829,454		829,454	
73	0603161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	04	31,263	29,924		29,924	U
74	0603527D8Z	RETRACT LARCH	04	20,960	20,437		20,437	U
75	0603600D8Z	WALKOFF	04		108,698		108,698	U
76	0603709D8Z	Joint Robotics Program	04	9,673	10,954		10,954	U

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2013 Base	FY 2013 OCO	FY 2013 Total	Sec
42	0603668D8Z	Cyber Security Advanced Research	03	19,935		19,935	U
43	0603670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Advanced Development	03	8,235		8,235	U
44	0603680D8Z	Defense-Wide Manufacturing Science and Technology Program	03	21,966		21,966	U
45	0603699D8Z	Emerging Capabilities Technology Development	03	24,662		24,662	U
46	0603711D8Z	Joint Robotics Program/Autonomous Systems	03				U
49	0603716D8Z	Strategic Environmental Research Program	03	65,282		65,282	U
51	0603727D8Z	Joint Warfighting Program	03	8,403		8,403	U
53	0603755D8Z	High Performance Computing Modernization Program	03				U
59	0603781D8Z	Software Engineering Institute	03	30,036		30,036	U
60	0603826D8Z	Quick Reaction Special Projects	03	107,002		107,002	U
61	0603828D8Z	Joint Experimentation	03				U
63	0603832D8Z	DoD Modeling and Simulation Management Office	03	47,433		47,433	U
66	0603941D8Z	Test & Evaluation Science & Technology	03	92,602		92,602	U
67	0603942D8Z	Technology Transfer	03				U
68	0604055D8Z	Operational Energy Capability Improvement	03	26,244		26,244	U
69	0303310D8Z	CWMD Systems	03	53,946		53,946	U
		Advanced Technology Development (ATD)		859,251		859,251	
73	0603161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E ADC&P	04	33,234		33,234	U
74	0603527D8Z	RETRACT LARCH	04	21,023		21,023	U
75	0603600D8Z	WALKOFF	04	94,624		94,624	U
76	0603709D8Z	Joint Robotics Program	04				U

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2011 Actuals	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Sec
77	0603714D8Z	Advanced Sensor Applications Program	04	17,896	18,408		18,408	U
78	0603851D8Z	Environmental Security Technical Certification Program	04	39,628	62,007		62,007	U
97	0603920D8Z	Humanitarian Demining	04	14,273	14,544		14,544	U
98	0603923D8Z	Coalition Warfare	04	13,431	12,434		12,434	U
99	0604016D8Z	Department of Defense Corrosion Program	04	38,463	34,153		34,153	U
100	0604400D8Z	Department of Defense (DoD) Unmanned Aircraft System (UAS) Common Development	04	44,884	24,289		24,289	U
101	0604670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Research and Engineering	04	7,038	7,252		7,252	U
102	0604775D8Z	Defense Rapid Innovation Program	04	123,101	192,805		192,805	U
103	0604787D8Z	Joint Systems Integration Command (JSIC)	04	18,180	12,716		12,716	U
105	0604828D8Z	Joint FIRES Integration and Interoperability Team	04	15,068	9,008		9,008	U
112	0605017D8Z	Reduction of Total Ownership Cost	04	19,349				U
113	0303191D8Z	Joint Electromagnetic Technology (JET) Program	04	3,993	3,358		3,358	U
		Advanced Component Development & Prototypes		417,200	560,987		560,987	
114	0604051D8Z	Defense Acquisition Challenge Program (DACP)	05	22,270	24,836		24,836	U
115	0604161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E SDD	05	7,786	7,009		7,009	U
116	0604165D8Z	Prompt Global Strike Capability Development	05	232,454	174,830		174,830	U
118	0604709D8Z	Joint Robotics Program - EMD	05	4,049	2,715		2,715	U
120	0604771D8Z	Joint Tactical Information Distribution System (JTIDS)	05	20,253	16,780		16,780	U
126	0605022D8Z	Defense Exportability Program	05		1,916		1,916	U
127	0605027D8Z	OUSD(C) IT Development Initiatives	05	8,815	4,846		4,846	U

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2013 Base	FY 2013 OCO	FY 2013 Total	Sec
77	0603714D8Z	Advanced Sensor Applications Program	04	16,958		16,958	U
78	0603851D8Z	Environmental Security Technical Certification Program	04	75,941		75,941	U
97	0603920D8Z	Humanitarian Demining	04	13,231		13,231	U
98	0603923D8Z	Coalition Warfare	04	11,398		11,398	U
99	0604016D8Z	Department of Defense Corrosion Program	04	3,283		3,283	U
100	0604400D8Z	Department of Defense (DoD) Unmanned Aircraft System (UAS) Common Development	04	12,368		12,368	U
101	0604670D8Z	Human, Social and Culture Behavior Modeling (HSCB) Research and Engineering	04	5,131		5,131	U
102	0604775D8Z	Defense Rapid Innovation Program	04				U
103	0604787D8Z	Joint Systems Integration Command (JSIC)	04				U
105	0604828D8Z	Joint FIRES Integration and Interoperability Team	04				U
112	0605017D8Z	Reduction of Total Ownership Cost	04				U
113	0303191D8Z	Joint Electromagnetic Technology (JET) Program	04	3,158		3,158	U
		Advanced Component Development & Prototypes		290,349		290,349	
114	0604051D8Z	Defense Acquisition Challenge Program (DACP)	05				U
115	0604161D8Z	Nuclear and Conventional Physical Security Equipment RDT&E SDD	05	6,817		6,817	U
116	0604165D8Z	Prompt Global Strike Capability Development	05	110,383		110,383	U
118	0604709D8Z	Joint Robotics Program - EMD	05				U
120	0604771D8Z	Joint Tactical Information Distribution System (JTIDS)	05	20,688		20,688	U
126	0605022D8Z	Defense Exportability Program	05	1,859		1,859	U
127	0605027D8Z	OUSD(C) IT Development Initiatives	05	7,010		7,010	U

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2011 Actuals	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Sec
129	0605075D8Z	DCMO Policy and Integration	05	956	41,529		41,529	U
130	0605140D8Z	Trusted Foundry	05	33,627				U
131	0605210D8Z	Defense-Wide Electronic Procurement Capabilities	05	11,561	14,412		14,412	U
133	0305304D8Z	DoD Enterprise Energy Information Management (EEIM)	05					U
134	0807708D8Z	Wounded Ill and Injured Senior Oversight Committee (WII-SOC) Staff Office	05	1,531				U
		System Development and Demonstration (SDD)		343,302	288,873		288,873	
135	0604774D8Z	Defense Readiness Reporting System (DRRS)	06	4,938	6,600		6,600	U
136	0604875D8Z	Joint Systems Architecture Development	06	7,802	4,570		4,570	U
137	0604940D8Z	Central Test and Evaluation Investment Development (CTEIP)	06	157,971	156,297		156,297	U
138	0604942D8Z	Assessments and Evaluations	06	2,434	2,690		2,690	U
139	0604943D8Z	Thermal Vicar	06	8,662	7,660		7,660	U
140	0605100D8Z	Joint Mission Environment Test Capability (JMETC)	06	9,986	10,218		10,218	U
141	0605104D8Z	Technical Studies, Support and Analysis	06	35,541	33,162		33,162	U
142	0605110D8Z	USD(A&T)--Critical Technology Support	06	4,314	1,433		1,433	U
143	0605117D8Z	Foreign Materiel Acquisition and Exploitation	06	94,649	64,524		64,524	U
145	0605128D8Z	Classified Program USD(P)	06	102,124	96,401		96,401	U
146	0605130D8Z	Foreign Comparative Testing	06	26,642	18,674		18,674	U
147	0605142D8Z	Systems Engineering	06	38,375	40,438		40,438	U
148	0605151D8Z	Studies and Analysis Support - OSD	06					U
149	0605161D8Z	Nuclear Matters-Physical Security	06	6,197	4,114		4,114	U
150	0605170D8Z	Support to Networks and Information Integration	06	14,590	9,122		9,122	U

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2013 Base	FY 2013 OCO	FY 2013 Total	Sec
129	0605075D8Z	DCMO Policy and Integration	05	25,269		25,269	U
130	0605140D8Z	Trusted Foundry	05				U
131	0605210D8Z	Defense-Wide Electronic Procurement Capabilities	05	10,238		10,238	U
133	0305304D8Z	DoD Enterprise Energy Information Management (EEIM)	05	3,556		3,556	U
134	0807708D8Z	Wounded Ill and Injured Senior Oversight Committee (WII-SOC) Staff Office	05				U
		System Development and Demonstration (SDD)		185,820		185,820	
135	0604774D8Z	Defense Readiness Reporting System (DRRS)	06	6,383		6,383	U
136	0604875D8Z	Joint Systems Architecture Development	06	3,845		3,845	U
137	0604940D8Z	Central Test and Evaluation Investment Development (CTEIP)	06	144,109		144,109	U
138	0604942D8Z	Assessments and Evaluations	06	2,419		2,419	U
139	0604943D8Z	Thermal Vicar	06	8,214		8,214	U
140	0605100D8Z	Joint Mission Environment Test Capability (JMETC)	06	19,380		19,380	U
141	0605104D8Z	Technical Studies, Support and Analysis	06	32,266		32,266	U
142	0605110D8Z	USD(A&T)--Critical Technology Support	06	840		840	U
143	0605117D8Z	Foreign Materiel Acquisition and Exploitation	06	56,012		56,012	U
145	0605128D8Z	Classified Program USD(P)	06				U
146	0605130D8Z	Foreign Comparative Testing	06	18,174		18,174	U
147	0605142D8Z	Systems Engineering	06	43,195		43,195	U
148	0605151D8Z	Studies and Analysis Support - OSD	06	6,457		6,457	U
149	0605161D8Z	Nuclear Matters-Physical Security	06	4,901		4,901	U
150	0605170D8Z	Support to Networks and Information Integration	06	6,307		6,307	U

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2011 Actuals	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Sec
151	0605200D8Z	General Support to USD (Intelligence)	06	6,570	6,549	9,200	15,749	U
156	0605502D8Z	Small Business Innovative Research	06	57,247	54,874		54,874	U
159	0605790D8Z	Small Business Innovation Research (SBIR)/ Small Business Technology Transfer (S	06	2,116	1,854		1,854	U
160	0605798D8Z	Defense Technology Analysis	06	12,991	15,582		15,582	U
161	0605799D8Z	Emerging Capabilities	06	19,092				U
164	0605804D8Z	Development Test and Evaluation	06	24,978	18,621		18,621	U
167	0606100D8Z	Budget and Program Assessments	06	5,919	4,432		4,432	U
168	0606301D8Z	Aviation Safety Technologies	06	10,500	6,879		6,879	U
169	0203345D8Z	Defense Operations Security Initiative (DOSI)	06		1,721		1,721	U
173	0303166D8Z	Support to Information Operations (IO) Capabilities	06	30,604	11,771		11,771	U
175	0303169D8Z	Information Technology Rapid Acquisition	06	4,978	4,147		4,147	U
177	0305193D8Z	Intelligence Support to Information Operations (IO)	06	21,079	15,002		15,002	U
179	0305400D8Z	Warfighting and Intelligence-Related Support	06	838	861		861	U
180	0804767D8Z	COCOM Exercise Engagement and Training Transformation (CE2T2)	06	47,050	37,255		37,255	U
184	0909999D8Z	Financing for Cancelled Account Adjustments	06	753				U
	RDT&E	Management Support		758,940	635,451	9,200	644,651	
189	0607828D8Z	Joint Integration and Interoperability	07	41,383	29,059		29,059	U
207	0303140D8Z	Information Systems Security Program	07	13,658	11,352		11,352	U
214	0303260D8Z	Defense Military Deception Program Office (DMDPO)	07	1,129	1,206		1,206	U
220	0305103D8Z	Cyber Security Initiative	07	496	411		411	U
223	0305125D8Z	Critical Infrastructure Protection (CIP)	07	10,382	12,818		12,818	U

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Office of Secretary of Defense
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2013 Base	FY 2013 OCO	FY 2013 Total	Sec
151	0605200D8Z	General Support to USD (Intelligence)	06	6,601		6,601	U
156	0605502D8Z	Small Business Innovative Research	06				U
159	0605790D8Z	Small Business Innovation Research (SBIR)/ Small Business Technology Transfer (S	06	1,857		1,857	U
160	0605798D8Z	Defense Technology Analysis	06	12,056		12,056	U
161	0605799D8Z	Emerging Capabilities	06				U
164	0605804D8Z	Development Test and Evaluation	06	15,110		15,110	U
167	0606100D8Z	Budget and Program Assessments	06	4,454		4,454	U
168	0606301D8Z	Aviation Safety Technologies	06				U
169	0203345D8Z	Defense Operations Security Initiative (DOSI)	06	2,637		2,637	U
173	0303166D8Z	Support to Information Operations (IO) Capabilities	06				U
175	0303169D8Z	Information Technology Rapid Acquisition	06				U
177	0305193D8Z	Intelligence Support to Information Operations (IO)	06	16,041		16,041	U
179	0305400D8Z	Warfighting and Intelligence-Related Support	06				U
180	0804767D8Z	COCOM Exercise Engagement and Training Transformation (CE2T2)	06	77,475		77,475	U
184	0909999D8Z	Financing for Cancelled Account Adjustments	06				U
		RDT&E Management Support		488,733		488,733	
189	0607828D8Z	Joint Integration and Interoperability	07				U
207	0303140D8Z	Information Systems Security Program	07	11,780		11,780	U
214	0303260D8Z	Defense Military Deception Program Office (DMDPO)	07	1,294		1,294	U
220	0305103D8Z	Cyber Security Initiative	07				U
223	0305125D8Z	Critical Infrastructure Protection (CIP)	07	10,462		10,462	U

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2011 Actuals	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Sec
227	0305186D8Z	Policy R&D Programs	07	5,304	6,520		6,520	U
229	0305199D8Z	Net Centricity	07	11,162	14,432		14,432	U
240	0305387D8Z	Homeland Defense Technology Transfer Program	07	2,934	2,631		2,631	U
241	0305600D8Z	International Intelligence Technology and Architectures	07	1,403	1,444		1,444	U
252	1001018D8Z	NATO AGS	07	90,624				U
		Operational Systems Development		178,475	79,873		79,873	
Total Research, Development, Test & Eval, DW				2,996,040	2,559,944	9,200	2,569,144	

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

Defense-Wide
FY 2013 President's Budget
Exhibit R-1 FY 2013 President's Budget
Total Obligational Authority
(Dollars in Thousands)

02 Feb 2012

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

Line No	Program Element Number	Item	Act	FY 2013 Base	FY 2013 OCO	FY 2013 Total	Sec
227	0305186D8Z	Policy R&D Programs	07	6,360		6,360	U
229	0305199D8Z	Net Centricity	07	21,190		21,190	U
240	0305387D8Z	Homeland Defense Technology Transfer Program	07	2,303		2,303	U
241	0305600D8Z	International Intelligence Technology and Architectures	07	1,478		1,478	U
252	1001018D8Z	NATO AGS	07				U
		Operational Systems Development		54,867		54,867	
Total Research, Development, Test & Eval, DW				2,091,252		2,091,252	

R-1C: FY 2013 President's Budget (Published Version), as of February 2, 2012 at 08:53:08

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 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 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

Program Element Table of Contents (Alphabetically by Program Element Title)

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	-	7.482	19.405	-	19.405	13.754	18.742	23.631	20.899	Continuing	Continuing
P010: *Basic Research Initiatives*	-	7.482	19.405	-	19.405	13.754	18.742	23.631	20.899	Continuing	Continuing

Note

This PE incorporates Minerva Research Initiative activities – Minerva chairs at Service Institutions and a solicitation for academic university-led research – and activities to implement the basic science office strategic plan for Department of Defense (DoD).

A. Mission Description and Budget Item Justification

Basic Research provides the DoD with a deep and broad awareness of current directions and breakthroughs in science and engineering through the scientific performers in areas of research that are relevant to U.S. military capabilities including: physics and the physical sciences, materials science, chemistry and chemical engineering, electrical engineering, mathematics, computer science, mechanical and aerodynamic engineering, ocean sciences, biological sciences, and the social sciences. Basic Research sustains scientific and engineering communities in areas that form critical technical underpinning of DoD capabilities. Basic Research through exploration and discovery provides unique means for disruptive non-incremental advances that can improve or radically change military strategy and operations.

The Minerva Research Initiative is a university-based social science basic research program initiated in FY 2008 and managed within the Office of the Secretary of Defense. Minerva seeks to build deeper understanding of the social, cultural, and political forces that shape regions of the world of strategic importance to the U.S. This will support more effective strategic decisions, operational policies and force deployments.

The Basic Research Strategic Support program funds initiatives to implement the Assistant Secretary of Defense for Research and Engineering strategic plan for defense basic research. This plan defines specific and quantifiable actions to help create conditions for defense basic research investments capable of creating high-payoff, transformative scientific breakthroughs for DoD. These initiatives support the five aims of providing scientific leadership, attracting the Nation's best scientists and engineers, ensuring the coherence and balance of the basic research portfolio, fostering connections between DoD performers and DoD, and improving the efficiency of the defense research business environment.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601110D8Z: *Basic Research Initiatives*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	14.731	20.115	-	20.115
Current President's Budget	-	7.482	19.405	-	19.405
Total Adjustments	-	-7.249	-0.710	-	-0.710
• Congressional General Reductions	-	-7.000			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-0.197			
• FFRDC	-	-0.052	-	-	-
• Other Program Adjustments	-	-	-0.710	-	-0.710

Change Summary Explanation

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

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P010: *Basic Research Initiatives*	-	7.482	19.405	-	19.405	13.754	18.742	23.631	20.899	Continuing	Continuing

A. Mission Description and Budget Item Justification

Basic Research provides the Department of Defense (DoD) with a deep and broad awareness of current directions and breakthroughs in science and engineering through the scientific performers in areas of research that are relevant to U.S. military capabilities including: physics and the physical sciences, materials science, chemistry and chemical engineering, electrical engineering, applied mathematics, computer science, mechanical and aerodynamic engineering, ocean sciences, biological sciences, and the social sciences. Basic Research sustains scientific and engineering communities in areas that form critical technical underpinning of DoD capabilities. Basic Research through exploration and discovery provides unique means for disruptive non-incremental advances that can improve or radically change military strategy and operations.

The Minerva Research Initiative is a university-based social science basic research program initiated in FY 2008 and managed within the Office of the Secretary of Defense. Minerva seeks to build deeper understanding of the social, cultural, and political forces that shape regions of the world of strategic importance to the U.S. This will support more effective strategic decisions, operational policies and force deployments.

The Basic Research Strategic Support program funds initiatives to implement the Assistant Secretary of Defense for Research and Engineering strategic plan for defense basic research. This plan defines specific and quantifiable actions to help create conditions for defense basic research investments capable of creating high-payoff, transformative scientific breakthroughs for DoD. These initiatives support the five aims of providing scientific leadership, attracting the Nation's best Scientists and Engineers, ensuring the coherence and balance of the basic research portfolio, fostering connections between DoD performers and DoD, and improving the efficiency of the defense research business environment.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Minerva Research Initiative	-	5.000	16.520
FY 2012 Plans: Support endowed faculty chairs for Minerva Research Fellows at defense education institutions (war colleges and service academies).			
FY 2013 Plans: Support endowed faculty chairs for Minerva Research Fellows at defense education institutions such as war colleges and service academies. Support new university-led research initiatives.			
Title: Basic Research Strategic Support	-	2.482	2.885
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Conduct workshops for scientific situational awareness, convening National research leaders to provide an experts perspective on potential breakthroughs and barriers to advancement in rapidly evolving fields of Basic Reasearch. Analyze university-related business practices for improvement. Bring on top scientific experts as IPAs to oversee engineering and social science initiatives. Hold Assistant Secretary of Defense for Research and Engineering - Deans Dialog event to foster more active connections with research universities. Establish Department of Defense (DoD)-wide Basic Research objectives and priorities. Analyze university-related business practices for improvement. ***FY 2013 Plans:*** Conduct workshops for scientific situational awareness, convening National research leaders to provide an experts perspective on potential breakthroughs and barriers to advancement in rapidly evolving fields of Basic Research. Bring on top scientific experts as Intergovernmental Personnel Act (IPAs) to oversee engineering and social science initiatives. Hold ASD(R&E)-Deans Dialog event to foster more active connections with research universities. Establish DoD-wide Basic research objectives and priorities. Analyze university-related business practices for improvement.			
Accomplishments/Planned Programs Subtotals	-	7.482	19.405

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 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	90.696	83.577	87.979	-	87.979	78.690	82.250	82.595	84.098	Continuing	Continuing
P120: *National Defense Education Program (NDEP)*	90.696	83.577	87.979	-	87.979	78.690	82.250	82.595	84.098	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 future generations of science, technology, engineering, and mathematics (STEM) talent. This program ensures that the Department of Defense (DoD) delivers innovative solutions to meet DoD and national security challenges.

NDEP addresses the DoD's need for STEM talent and develops the current and future workforce to strengthen the Department's scientific and technological capabilities. NDEP's focus is to develop a continuum of high quality, experiential STEM engagements for DoD from K-12 students through world-class researchers.

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

SMART awards highly competitive scholarships to undergraduate and graduate students in 19 STEM disciplines and moves them directly into DoD's workforce following graduation. Since its inception as a pilot program in 2005, SMART has supported ~1150 students from bachelor to doctoral levels and ~380 have transitioned into the workforce. SMART ensures that DoD has a steady infusion of newly educated and high caliber U.S. technical talent ready to fulfill its mission.

NSSEFF supports 29 world-class researchers (NSSEFF Fellows) in areas of critical importance to DoD and ensures the proliferation of future and exceptional talent. Approximately 100 undergraduate students, ~200 graduate students and ~100 post-doctoral scholars at academic institutions work with the NSSEFF Fellows. Three cohorts of NSSEFF Fellows, with the first selected in 2008, have provided critical connections between academia and the DoD science and engineering enterprise. Fellows' work spans all seven DoD Science and Technology (S&T) priorities and the six high interest basic science areas, often in cutting-edge areas at the intersection of these areas.

NDEP K-12 leverages the DoD's STEM expertise as one of its most valuable assets, creating engagement opportunities for schools, students, teachers, and public sector and industry partners with DoD subject matter experts (SMEs) especially in communities adjacent to DoD laboratories and bases. Since 2007, NDEP K-12 has increased the number of DoD facilities that directly engage their local education communities to: 1) build student interest in STEM fields and disciplines and in careers specific to the Department, 2) develop science, engineering and mathematics skills important to the DoD, and 3) fulfill DoD's future demand for highly skilled STEM professionals. Through after-school learning opportunities, DoD STEM professionals teach key audiences about DoD's current and future real-world S&T applications. DoD STEM professionals also serve as role models, mentors, content experts and competition judges.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense					DATE: February 2012
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	109.911	101.591	93.310	-	93.310
Current President's Budget	90.696	83.577	87.979	-	87.979
Total Adjustments	-19.215	-18.014	-5.331	-	-5.331
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.475	-			
• SBIR/STTR Transfer	-2.302	-2.436			
• Congressional Adjustments	-15.600	-15.000	-	-	-
• Economic Assumptions	-0.479	-	-	-	-
• FFRDC	-0.333	-0.578	-	-	-
• Other Program Adjustments	-0.026	-	-5.331	-	-5.331

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P120: *National Defense Education Program (NDEP)*	90.696	83.577	87.979	-	87.979	78.690	82.250	82.595	84.098	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 future generations of science, technology, engineering, and mathematics (STEM) talent. This program ensures that the Department of Defense (DoD) delivers innovative solutions to meet DoD and national security challenges.

NDEP addresses the DoD's need for STEM talent and develops the current and future workforce to strengthen the Department's scientific and technological capabilities. NDEP's focus is to develop a continuum of high quality, experiential STEM engagements for DoD from K-12 students through world-class researchers.

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

SMART awards highly competitive scholarships to undergraduate and graduate students in 19 STEM disciplines and moves them directly into DoD's workforce following graduation. Since its inception as a pilot program in 2005, SMART has supported ~1150 students from bachelor to doctoral levels and ~380 have transitioned into the workforce. SMART ensures that DoD has a steady infusion of newly educated and high caliber U.S. technical talent ready to fulfill its mission.

NSSEFF supports 29 world-class researchers (NSSEFF Fellows) in areas of critical importance to DoD and ensures the proliferation of future and exceptional talent. Approximately 100 undergraduate students, ~200 graduate students and ~100 post-doctoral scholars at academic institutions work with the NSSEFF Fellows. Three cohorts of NSSEFF Fellows, with the first selected in 2008, have provided critical connections between academia and the DoD science and engineering enterprise. Fellows' work spans all seven DoD Science and Technology (S&T) priorities and the six high interest basic science areas, often in cutting-edge areas at the intersection of these areas.

NDEP K-12 leverages the DoD's STEM expertise as one of its most valuable assets, creating engagement opportunities for schools, students, teachers, and public sector and industry partners with DoD subject matter experts (SMEs) especially in communities adjacent to DoD laboratories and bases. Since 2007, NDEP K-12 has increased the number of DoD facilities that directly engage their local education communities to: 1) build student interest in STEM fields and disciplines and in careers specific to the Department, 2) develop science, engineering and mathematics skills important to the DoD, and 3) fulfill DoD's future demand for highly skilled STEM professionals. Through after-school learning opportunities, DoD STEM professionals teach key audiences about DoD's current and future real-world science and technology applications. DoD STEM professionals also serve as role models, mentors, content experts and competition judges.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Science, Mathematics And Research for Transformation (SMART) Defense Education Program	48.789	45.271	46.867

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

Description: SMART is a scholarship-for-service program that provides support to high-performing U.S. graduate and undergraduate students in 19 academic Science, Technology, Engineering and Mathematics (STEM) disciplines identified as areas of future workforce need by the Department of Defense (DoD).

The disciplines align with the Department's seven Science and Technology (S&T) priorities and the six high interest basic science research areas. The disciplines are: Aeronautical and Astronautical Engineering; Biosciences; Chemical Engineering; Chemistry; Civil Engineering; Cognitive, Neural, and Behavioral Sciences; Computer Science; Electrical Engineering; Geosciences; Industrial and Systems Engineering; Information Sciences; Materials Science and Engineering; Mathematics; Mechanical Engineering; Naval Architecture and Ocean Engineering; Nuclear Engineering; Oceanography; Operations Research; and Physics. Upon completion of their degree, students fulfill a service commitment to the DoD on a one-to-one payback per year of education funded.

Management of the SMART program falls under the Research Directorate (RD) within the Office of the Assistant Secretary of Defense for Research and Engineering (OASD(R&E)). Two types of individuals participate in the program: retention scholars who are current DoD employees, and recruitment scholars who are college students enrolled in undergraduate and graduate programs and who represent new talent for the Department.

Since 2005, ~1,150 students have participated in SMART at ~160 sponsoring facilities and several other DoD components. As of September 17, 2011, ~380 SMART scholars of the ~1,150 have transitioned into the service commitment phase. To date, scholars have transitioned into the following DoD components: ~140 at Air Force facilities, ~120 at Army, ~105 at Navy, and ~10 at other DoD components. Among those who transitioned to employment, 92 had completed their service commitment. Of these, 82% continue to serve beyond their commitment.

FY 2011 Accomplishments:

• Emphasized outreach to eligible applicants from underrepresented groups such as women and minorities, veterans, and individuals separating from the Services. From 2010 to 2011, the number of female applicants increased by 21 percent. From 2010 to 2011, the number of minority applicants (Hispanic, Black or African American, American Indian/Alaskan Native, and Native Hawaiian/Pacific Islander) increased by 32 percent.
• Increased the number of eligible applicants from Historically-Black Colleges and Universities and Minority-Serving Institutions (HBCU/ MSIs).
• Increased the number of reviewers from HBCU/MSIs. In 2011, the number of reviewers from HBCUs/MSIs increased by more than 100 percent.
• Developed and instituted best practices for mentoring and workforce development initiatives for current participants.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Transitioned approximately 240 SMART participants into the DoD workforce. • Selected 290 new participants. • Began transition of the administration of the SMART program from the Naval Postgraduate School to the Office of the Assistant Secretary of Defense for Research and Engineering/Research Directorate (OASD(R&E)/RD). ***FY 2012 Plans:*** • Successfully transition the administration of the Science, Mathematics And Research for Transformation (SMART) program from the Naval Postgraduate School to OASD(R&E)/RD. • Increase transparency and effectiveness of the program through the engagement of Senior Level Service agencies and benchmarking across Department of Defense (DoD) components. • 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. • Continue to increase the number of eligible applicants as well as application reviewers from Historically-Black Colleges and Universities and Minority-Serving Institutions (HBCU/ MSIs). • Assess the mentoring and workforce development initiatives for current participants using effective practices from successful mentors and facilities. • Assess the effectiveness of the transition process through data analysis and implementation of direct hiring authority. • Transition approximately 200 participants into the DoD Science, Technology, Engineering and Mathematics (STEM) workforce. • Select new participants based on available funding. • Create efficiencies through the streamlining of processes and development of Web portals and information management systems. • Collect data on the impact of the SMART investment on the DoD and facilities (e.g., patents, publications and other outputs) as a way of “crowdsourcing” research and networking DoD programs. ***FY 2013 Plans:*** • Continue to 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. • Continue to streamline processes and improve Web portals and information management systems. • Continue to assess the mentoring and workforce development initiatives for current participants and the effectiveness of the transition process. • Transition approximately 100 participants into the DoD workforce. • Select new participants based on available funding.			
Title: National Security Science and Engineering Faculty Fellowship (NSSEFF)	30.721	21.000	25.930

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

Description: NSSEFF helps to ensure that DoD 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 for the DoD.
• Educate and train outstanding student and post-doctoral researchers for the DoD 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 scientific and technical 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 at our Nation's leading universities to conduct 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. In addition, NSSEFF Fellows forge research partnerships with DoD labs.

FY 2011 Accomplishments:
• Identified additional opportunities to engage students with DoD scientific and technical professionals.
• Integrated NSSEFF Fellows' research activities and outcomes into DoD's research community through participation in presentations, symposia, and program reviews.
• Implemented 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.

NSSEFF Fellows reported on the following interactions with DoD:
• 27 fellows reported 132 different interactions with DoD.
• 13 fellows served on 33 DoD panels or committees or spoke at DoD events.
• 5 fellows hosted 9 DoD scientists' or engineers' visits to universities.
• 4 fellows brought students and/or post-docs to DoD facilities.
• 2 fellows placed students in internships at DoD facilities.
• 16 fellows collaborated with DoD scientists and engineers.
• 51 NSSEFF students and post-docs were supported for conferences and visits to corporate labs.

NSSEFF Fellows' reports also reported:
• 1,028 presentations, including 418 international
• 329 peer-reviewed publications

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• 39 patents (filed or received) ***FY 2012 Plans:*** • Support will continue for current NSSEFF 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. ***FY 2013 Plans:*** • Support will continue for current NSSEFF Fellows.			
Title: K-12 ***Description:*** As the demand for highly skilled science and technical workers continues to grow, sustaining Department of Defense (DoD) operations and local economic growth depends on a diverse Science, Technology, Engineering and Mathematics (STEM) talent pool. Growing competition from the private sector and other countries and economies for talent, and a current STEM workforce that is nearing retirement eligibility underscores the Department's need to invest in K-12 informal education and outreach. NDEP K-12 leverages the DoD's STEM expertise as one of its most valuable assets, creating engagement opportunities for schools, students, teachers, and public sector and industry partners with DoD subject matter experts (SMEs) especially in communities adjacent to DoD laboratories and bases. The DoD is reinvesting in and strengthening these local communities by enhancing student awareness and understanding of STEM careers and improving student education and teacher capabilities by providing support for informal STEM opportunities that support current and future local economic growth. ***FY 2011 Accomplishments:*** • Built the interest of more than 180,000 K-12 students in 28 states in STEM fields, disciplines and careers of importance to the DoD. • More than 2,500 DoD SMEs partnered with and educated more than 8,000 teachers in 28 states. • Piloted a college-level engineering mathematics course in high schools in Maryland and Washington, D.C. to encourage student interest in advanced degrees in engineering and to build mathematics skills. • Highlighted scientific and technological research conducted by DoD laboratories and the DoD enterprise. • Increased the number of community-based partnerships among higher education institutions and K-12 school systems to obtain grants for enhancing STEM learning pathways rather than one-time experiences. • Continued to support after-school programs, summer camp and national competition opportunities for students and teachers by providing DoD SMEs as role models, mentors and competition judges.	11.186	17.306	15.182

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Increased the number of sustainable partnerships among higher education institutions and K-12 school systems to decrease the amount of funding required from NDEP and to build capacity for long-term sustainability.			
FY 2012 Plans:			
• Increase the quality and duration of interventions led by DoD SMEs in local communities near DoD laboratories and bases.			
• Establish system-wide evaluation and assessment measures to accurately determine effective practices and opportunities to expand engagement with students, teachers, schools, the public sector and industry community partners, and national organizations.			
• Build upon existing, sustainable partnerships among higher education institutions and K-12 schools systems to decrease the level of funding required from NDEP and to build capacity for long-term sustainability.			
• Build upon existing, sustainable partnerships between NDEP K-12 and DoD laboratories and bases to identify effective engagement practices and work to build long-term sustainability and institutionalization of K-12 informal education and outreach.			
• Expand partnerships across the Department to maximize DoD's investments in K-12 learning to leverage all available funding and to build a future Science, Technology, Engineering and Mathematics (STEM) workforce capacity for the Department, the federal government and the Nation.			
• Participate in the 2012 U.S.A. Science and Engineering Festival Expo and the Real World Design Challenge.			
• Distribute more than 5,000 copies of the "Engineering – Go For It" magazine for middle school youth.			
• Expand the college-level engineering and mathematics course for high school students.			
FY 2013 Plans:			
• Increase the quality and duration of interventions lead by Department of Defense (DoD) subject matter experts (SMEs) in local communities near DoD laboratories and bases.			
• Establish system-wide evaluation and assessment measures to accurately determine effective practices and opportunities to expand engagement with students, teachers, schools, public sector and industry community partners, and national organizations.			
• Build upon existing, sustainable partnerships among higher education institutions and K-12 schools systems to decrease the level of funding required from NDEP and to build capacity for long-term sustainability.			
• Build upon existing, sustainable partnerships between NDEP K-12 and DoD laboratories and bases to identify effective engagement practices and work to build long-term sustainability and institutionalization of K-12 informal education and outreach.			
• Expand partnerships across the Department to maximize DoD's investments in K-12 learning to leverage all available funding and to build a future STEM workforce capacity for the Department, the federal government and the Nation.			
• Expand the college-level engineering and mathematics course for high school students.			
• Maximize the NDEP K-12 investment through the implementation of effective practices for the engagement of local partners with DoD SMEs.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Strengthen the sustainability and institutionalization of NDEP K-12 informal education and outreach conducted by DoD laboratories and bases.			
Accomplishments/Planned Programs Subtotals	90.696	83.577	87.979

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	19.917	20.328	20.615	-	20.615	20.840	21.914	22.499	22.909	Continuing	Continuing
P000: *Insensitive Munitions*	14.177	14.495	14.216	-	14.216	14.449	14.858	15.263	15.472	Continuing	Continuing
P204: *Enabling Fuze Technology*	5.740	5.833	6.399	-	6.399	6.391	7.056	7.236	7.437	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 Department of Defense (DoD) and Department of Energy 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 DoD Instruction 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 (BFW), Anti-Armor Warheads (AAW), and Large Caliber Gun Propulsion (LCGP). MATGs, under tri-service leadership, have developed technology roadmaps for each Munition Area, that 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

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602000D8Z: *Joint Munitions Technology*

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 Joint Fuze Technology Program, 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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	22.448	21.592	20.267	-	20.267
Current President's Budget	19.917	20.328	20.615	-	20.615
Total Adjustments	-2.531	-1.264	0.348	-	0.348
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.146	-0.127			
• Other Program Adjustments	-0.206	-	0.348	-	0.348
• FFRDC	-0.075	-0.137	-	-	-
• Economic Assumptions	-0.104	-	-	-	-
• Congressional Adjustments	-2.000	-1.000	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P000: *Insensitive Munitions*	14.177	14.495	14.216	-	14.216	14.449	14.858	15.263	15.472	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. 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 that 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 2011	FY 2012	FY 2013
Title: High Performance Rocket Propulsion	2.580	2.880	2.656
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 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 five, ten, or fifteen 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 HPP rocket motors, and solving the Fast Cookoff response of very large HPP motors.			
FY 2011 Accomplishments: • Completed small scale IM tests, demonstrated scale up of extinguishable high performance rocket propellants to one gallon size batches, and determined low temperature mechanical properties. • Conducted sub-scale fast cook-off testing to demonstrate mitigation methodology.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Completed sensor network design, conducted fast cook-off testing and selected sensor network technologies for BA 6.3 demonstration. • Scaled up reduced smoke propellant to the one and five gallon scale with acceptable processing, safety, mechanical properties to enable small-scale motor testing and IM tests. • Formulated and refined the processing of impregnated fibers in composite cases. Began conducting safety and environmental testing. • Completed scale up of high performance rocket propellants to one pint size batches and conduct mechanical and ballistic properties testing. • Scaled up formulation to produce five pounds of material and started safety and mechanical properties testing. ***FY 2012 Plans:*** • Scale up reduced smoke propellant to the five gallon scale with acceptable processing, conduct small-scale motor and impact testing, develop liner, and conduct slow cook-off IM test. • Complete reduced smoke propellant evaluation, small-scale motor testing, accelerated aging and IM tests. Conduct propellant formulation efforts to produce burn or no-reaction response for fragment impact, bullet impact, slow cook-off and fast cook-off events. • Determine the thermal and mechanical response and the mechanical strength of the fabricated composite cases impregnated with additives with continued safety and environmental testing. • Complete scale up of high performance rocket propellants to one gallon size batches, refine processing procedures and conduct sensitivity and safety testing. • Design, analyze and build small-scale motors and conduct safety and environmental tests. ***FY 2013 Plans:*** • Study thermal and mechanical responses of composite cases to slow cook-off and aerodynamic heating. • Complete scale up of high performance rocket propellants to five gallon size batches, refine processing procedures and conduct sensitivity and safety testing. • Complete final assembly and conduct slow and fast cook-off IM tests.			
Title: Minimum Signature Rocket Propulsion	3.525	2.978	3.598
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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 five, ten, and fifteen year goals of the MSP MATG are concentrated on solving the IM response of missile propulsion systems due to Fragment Impact, Slow Cook-Off, and Shaped Charge Jet (SCJ) threats. ***FY 2011 Accomplishments:*** • Conducted small scale IM tests and compared 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. • Demonstrated passive venting design for slow cook-off IM test. • Completed binder system alternatives assessment and down-selected formulation for scale up to one gallon size mix. • Scaled-up to gallon mix batches and evaluated bonding agents in impact and shock tests to determine effectiveness. • Scaled up novel ingredients to pint scale mixes and conducted mechanical, aging and thermal testing to determine propellant characteristics. • Synthesized and characterized new propellant to 100 gram scale to support initial IM evaluation testing. • Synthesized and produced material to five gram quantity batches to conduct thermal stability studies. Produced material to 25 gram quantity batches. ***FY 2012 Plans:*** • Optimized propellant candidates will be scaled-up to further characterize their initial ballistic performance and sensitivity properties. Conduct sub-scale motor performance test via seven inches baseline motor configuration, strand burner ballistics test, thermal cook-off and impact IM tests. • Complete binder system alternatives full scale testing using one gallon size mixes for transition to BA 6.3 project. • Conduct additional impact and shock testing on alternative composite minimum signature propellant. Manufacture analogue motors and select best candidate for transition to BA 6.3. • Scale-up to one pint mixes novel propellant and conduct impact and cook-off testing to determine IM responses of formulation. • Scale up unique propellant and synthesize to 25, 50, 100 gram and pint scale, and conduct small-scale IM tests. ***FY 2013 Plans:*** • Complete ballistics, shock sensitivity, beyond visual range impact, failure diameter, and run-distance detonation tests. Conduct larger scale IM tests with final formula down-selection and transition to BA 6.3 demonstration. • Manufacture five gallon mixes to support IM analogue motor loading and testing. • Scale up to one gallon scale, load analog motors, and conduct full-scale IM tests.			
Title: Blast and Fragmentation Warheads (BFW)	3.798	3.984	3.758

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

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 and 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 minimum maintain 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 and 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 or packaging materials and systems, shock mitigation liners, initiation devices, techniques, and technologies. The five, ten, and fifteen year goals of the BFW MATG are concentrated on solving the IM response of blast fragment warheads to the Sympathetic Detonation, Fast Cookoff and SCJ threats.

FY 2011 Accomplishments:
- Completed initiation studies in preparation to transition to BA 6.3 project.
- Scaled up novel ingredient formulation to 150 gram batches and conducted safety and sensitivity testing. Completed sub-scale IM testing on optimized formulation using novel ingredient.
- Scaled up specially coated materials to 100 gram production capability in order to characterize material and conducted various tests to determine responses.
- Conducted characterization and IM testing to validate improvements in reactions to stimuli.
- Concluded first generation proof of concept experiments, began modeling and simulation of novel explosive material manufacturing studies, and began weaponization study and demonstration of IM characteristics of unique warhead explosive.
- Designed and fabricated a unique sensitization method application fixture.

FY 2012 Plans:
- Down-select novel ingredient material formulation, complete sub-scale testing, and begin transition to BA 6.3 project.
- Conclude second generation proof of concept experiments and start weaponization study of unique warhead explosive material.
- Begin down-selecting materials and the sensitization process in order to conduct device scale testing.

FY 2013 Plans:
- Conclude manufacturing studies and weaponization study for Compounded HE Composites and prepare to demonstrate IM characteristics of unique warhead explosive material.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Conclude down-selecting materials and the sensitization process in order to conduct device scale testing to validate the process and transition to BA 6.3 project.			
Title: Anti-Armor Warheads (AAW)	2.278	2.136	1.912
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 minimum maintain 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, and 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, and initiation devices, techniques, and technologies. The five, ten, and fifteen 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 five year goal of solving Sympathetic Detonation threats, with a ten and fifteen year goal of resolving the IM response to the Shaped Charge Jet threat. ***FY 2011 Accomplishments:*** • Optimized processing procedure and completed characterization studies for cast cured explosives. Conducted accelerated aging study and various safety and IM tests to ensure acceptable aging properties of explosive material. • Completed fragment impact screening test analysis and prepared for BA 6.3 transition. • Completed characterization testing for formulation candidates, down-select, scale-up formulations, and complete IM/ performance tests for two candidates. • Continued 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. • Scale up the baseline configuration to ten gallon, the spray coated melt-case to one and ten gallon, and the pressed formulations with spray coated high melting explosive. ***FY 2013 Plans:*** • Conduct critical diameter and slow cook-off IM tests of down-selected formulations.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Conduct formulation and initial screening of explosive material to determine physical and performance characteristics.			
Title: Large Caliber Gun Propulsion (LCGP)	1.996	2.517	2.292
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 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 five, ten, or fifteen 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 2011 Accomplishments:*** • Conducted small-scale testing and characterization efforts, as well as formulation down-selection effort. • Conducted instrumented ballistic simulator tests and completed modification of required modeling and simulation tools for slow cook-off studies. • Synthesized and scaled-up energetic salts to 500 gram quantity and conducted characterization testing to support formulation and go/no-go decision. ***FY 2012 Plans:*** • Manufacture large-scale quantities and complete full-scale 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. • Continue formulation development to produce optimum IM properties and scale-up to manufacture three kilogram batches. Conduct various tests to validate IM properties and suitability for gun propellant. ***FY 2013 Plans:*** • Establish design of experiments test matrix and complete subsequent modeling effort. Conduct IM and mechanical tests on containers and compare results with the models' predictions. • Optimize formulation and conduct IM tests to determine viability of down-select candidate for gun propellants.			
Accomplishments/Planned Programs Subtotals	14.177	14.495	14.216

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0603000D8Z P002: *BA 3 Insensitive Munitions Advanced Technology*	13.302	14.529	20.819		20.819	20.808	22.521	23.147	23.437	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) Munition Area Technology Group Technology Roadmaps are prepared, evaluated, and analyzed by Joint Insensitive Muntions Technology Program management and technical staff.
3) Chairman's Annual Assessments for each MATG are critically reviewed by the Technical Advisory Committee 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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P204: *Enabling Fuze Technology*	5.740	5.833	6.399	-	6.399	6.391	7.056	7.236	7.437	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, and 4) Enabling Fuze Technologies and Common Architecture.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Hard Target Fuzing	1.494	1.645	1.661
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 Accomplishments: - Continued projects on the hard target penetration weapon systems based modeling and simulation tool to determine fuze response to the weapon dynamics. - Continued solid mechanics modeling and simulation technology projects to provide accurate material properties. - Created 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 2012 Plans: - Develop underlying technologies and testing methods to define the high-speed penetration environment. - Begin verification of hydrocode/EPIC 22 modeling and simulation tools via hard target weapon instrumented testing.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- 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 2013 Plans:*** - Develop and validate modeling and simulation code using high fidelity, multi-scale simulation techniques. - Adapt and transition Joint Fuze Technology Program developed testing protocol in boosted and high speed penetrator development programs. - Develop survivable modular fuze technology for multi-common miniature munitions with distributed/embedded fuzes.			
Title: Tailorable Effects Fuzing	1.578	1.696	1.712
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); developing initiation and multi-point technologies to include electronic safe and arm based multi-point initiators for tunable output – scalable yield warheads; MicroElectro-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 Accomplishments:*** - Continued development of tailorable initiation technologies including a) multi-point plug-n-play, b) lower energy detonators/ initiators, c) miniaturized explosive trains, and d) multi-point initiation using energetic tracks, traces or deposition. - Developed low-voltage command/arm system for distributed fuzing systems to enable tailorable initiation control for warhead detonation. ***FY 2012 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 2013 Plans:*** - Demonstrate and transition into 6.3 advanced technology development of detonator, initiation and fireset technologies. - Begin to develop Tailorable Effects modeling and simulation using hydrocode.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- 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			
Title: High Reliability Fuzing ***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 percent 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 Accomplishments:*** - Developed and analyzed concepts for high reliability fuze architecture for Service cluster munitions applications. - Continued development of a target detection sensor and safety and arming device that would provide an increase in the overall fuze reliability. ***FY 2012 Plans:*** - Research and develop novel technologies for UXO reduction features including fuze mechanisms and initiation energetic to eliminate any unexploded ordnance. - Build high reliability fuze architecture technology components that satisfy reliability while maintaining safety by eliminating singlepoint and common-mode failures. - Downselect cluster munition fuze design and architecture. Fabricate and evaluate brassboard submunition fuzes and conduct explosive train tests, static expulsion tests and engineering tests. ***FY 2013 Plans:*** - Demonstrate high reliability fuze architecture concepts that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. - Apply next generation cluster munition fuze design and architecture, fabricate component technology prototypes, and conduct performance and reliability tests in ballistic and harsh environment testing.	1.398	1.516	1.574
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 improved target detection capabilities.	1.270	0.976	1.452

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: - Continued development for proximity fuze sensors and electronics for detecting targets, impact, voids, and media which are highly resistant to exploitation. - Continued thin film/conformal thermal battery development for fuzing, which will result in cheaper, conformal, smaller, cooler thermal batteries with higher energy or power densities. ***FY 2012 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 2013 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. - Transition to 6.3 development of exploitation resistant proximity fuze sensors and electronics technology.			
Accomplishments/Planned Programs Subtotals	5.740	5.833	6.399

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0603000D8Z P301: *BA 3 Enabling Fuze Advanced Technology*	1.041	1.077	4.792		4.792	6.487	7.979	8.196	8.497	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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

2) Fuze Area Technology Group (FATG) Technology Roadmaps are prepared, evaluated, and analyzed by Joint Fuze Technology Program management and technical staff.
3) Chairman's Annual Assessments for each FATG are critically reviewed by the Technology Advisory Committee 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 Munitions programs.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	22.678	-	-	-	-	-	-	-	-	Continuing	Continuing
P489: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*	22.678	-	-	-	-	-	-	-	-	Continuing	Continuing

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 Department of Defense (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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	15.067	-	-	-	-
Current President's Budget	22.678	-	-	-	-
Total Adjustments	7.611	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.452	-			
• SBIR/STTR Transfer	-0.634	-			
• Congressional Adjustments	8.000	-	-	-	-
• Economic Assumptions	-0.117	-	-	-	-
• FFRDC	-0.085	-	-	-	-
• Other Program Adjustments	-0.005	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P489: *Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)*	22.678	-	-	-	-	-	-	-	-	Continuing	Continuing

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 Department of Defense (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 2011	FY 2012	FY 2013
Title: Historically Black Colleges and Universities and Minority Institutions (HBCU/MI)	22.678	-	-
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.			
FY 2011 Accomplishments: Developed and issued one solicitation for research projects and equipment. The solicitation closed on May 25, 2011 and the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) News Release announcing the winners was published			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
on December 7, 2011. The DoD HBCU/MI program awarded 33 basic research grants totaling $17.3 million. Continued efforts with HBCUs/MIs that included the following. (1) Supported research and collaboration with DoD facilities and personnel. (2) Conducted research and educational collaboration between the Naval Air Warfare Center and other HBCUs/MIs in support of the Avionic Enabling Technology Development for Manned and Unmanned Airborne System project. Forty-one interns worked at DoD Labs in the summer of 2011. Twenty were hired by DoD Labs upon completion of internships ($2.0 million). (3) Provided funding in the amount of $2.0 million in support of the John Hopps Defense Research Scholars Program at Morehouse College. Other funding supported grants initiatives for policy and E-Government and Service administrative tax in the amount of $1.378 million.			
FY 2012 Plans: Issue program solicitation to select new awards in support of basic research and student involvement with principal investigators at HBCUs/MIs. Continue the research and educational collaboration project between Naval Air Warfare Center and HBCUs/MIs in support of the Avionic Enabling Technology Development for Manned and Unmanned Airborne System. Goal is to increase the number of 2012 summer interns from 40 to 50 participants. Collect and assess the data from the DoD Components on the actions described in the ASD(R&E) December 2, 2011 memo, "Reinvigorating Our Relationship with HBCUs and MIs." Conduct annual review of the six DoD Centers of Excellence started in FY 2011. Continue to expand partnerships among major institutions of higher education and the HBCUs/MIs.			
FY 2013 Plans: Conduct annual competition of the HBCU/MI program. Continue to assess the DoD-wide HBCU/MI programs in order to strengthen the competitive position of these institutions within DoD. Conduct annual review of the six DoD Centers of Excellence started in FY 2011. Continue to examine the effectiveness of DoD-wide efforts to increase the number of minorities graduating from HBCUs/MIs in STEM fields and the transition of these students into DoD or the federal workforce.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Conduct outreach workshops to expose HBCUs/MIs to opportunities in DoD.			
Accomplishments/Planned Programs Subtotals	22.678	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Since 2007, the following data has been 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 constitutes the "Existing Baseline" for measurement and improvement in future years.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	31.004	36.608	36.826	-	36.826	37.014	42.574	43.782	44.588	Continuing	Continuing
P534: *Lincoln Laboratory*	27.839	30.385	32.710	-	32.710	32.841	38.268	39.361	40.097	Continuing	Continuing
P535: *Technical Intelligence*	3.165	3.295	3.634	-	3.634	3.649	4.306	4.421	4.491	Continuing	Continuing
P536: *Testbed for Comparative Analysis*	-	2.928	0.482	-	0.482	0.524	-	-	-	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 has evolved in FY 2012 to include three new categories for a total of seven core technology areas and four continuing 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 Department of Defense (DoD) sensors.
- (U) Communications (formerly Advance Optical Communications), focusing on high-efficiency free-space optical communications links as well as development and applications of metamaterials.
- (U) Intelligence, Surveillance, and Reconnaissance, including the development of novel active and passive Radio Frequency (RF) and electro-optic sensors useful for intelligence, surveillance, and reconnaissance applications.
- (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) Air and Missile Defense (new in FY 2012), with an emphases on novel discrimination schemes and electronic warfare applications.
- (U) Space Control (new in FY 2012), focusing on advanced remote-sensing architectures and small satellite applications.
- (U) Information, Computation, and Exploitation (new in FY 2012), which seeks to develop novel architectures, tools, and techniques for the processing, fusion, interpretation, computation and exploitation of multi-sensor, multi-intelligence data.
- (U) Technical Initiatives, include biological sciences to aid the warfighter 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) In FY 2012, two efforts (Homeland Protection and Decision Support) no longer receive funding under the LL Program. Work previously conducted under these initiatives is either being carried forward under the aforementioned application-specific areas or has been transitioned to external support.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*

(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 forecasting capability through a collaborative effort by the Department of Defense (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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	32.830	37.916	38.359	-	38.359
Current President's Budget	31.004	36.608	36.826	-	36.826
Total Adjustments	-1.826	-1.308	-1.533	-	-1.533
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.879	-1.055			
• Other Program Adjustments	-0.659	-	-1.533	-	-1.533
• FFRDC	-0.121	-0.253	-	-	-
• Economic Assumptions	-0.167	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P534: *Lincoln Laboratory*	27.839	30.385	32.710	-	32.710	32.841	38.268	39.361	40.097	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 has evolved in FY 2012 to include three new categories for a total of seven core technology areas and four continuing 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) Communications (formerly Advance Optical Communications), focusing on high-efficiency free-space optical communications links as well as development and applications of metamaterials.
- (U) Intelligence, Surveillance, and Reconnaissance, including the development of novel active and passive Radio Frequency (RF) and electro-optic sensors useful for intelligence, surveillance, and reconnaissance applications.
- (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) Air and Missile Defense (new in FY 2012), with an emphases on novel discrimination schemes and electronic warfare applications.
- (U) Space Control (new in FY 2012), focusing on advanced remote-sensing architectures and small satellite applications.
- (U) Information, Computation, and Exploitation (new in FY 2012), which seeks to develop novel architectures, tools, and techniques for the processing, fusion, interpretation, computation and exploitation of multi-sensor, multi-INT data.
- (U) Technical Initiatives, include biological sciences to aid the warfighter and to 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) In FY 2012, two efforts (Homeland Protection and Decision Support) no longer receive funding under the LL Program. Work previously conducted under these initiatives is either being carried forward under the aforementioned application-specific areas or has been transitioned to external support.

(U) Supporting these and other priority technology and capability areas is a work effort titled 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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Title: Advanced Electronics Technology	5.801	4.956	5.644
FY 2011 Accomplishments: (U) Demonstrated imaging focal planes through the use of an advanced set of design and fabrication tools and developed 3-D integrated electronics and optoelectronics. Developed coherent analog photonics via co-integration of silicon and III-V materials. Developed high peak-power quantum cascade lasers (QCL) arrays for frequency-agile remote sensing applications.			
FY 2012 Plans: (U) Develop new imager and electronics architectures for multi-modal and extended wavelength imaging. Continue development of photonics integrated-circuit-based coherent optical systems. Investigate novel semiconductor optical waveguide laser and amplifier designs architected for beam-combined sensing and directed energy applications.			
FY 2013 Plans: (U) Extend infrared performance of high pixel count arrays of photon counting imagers. Combine advanced imagers with higher density digital pixel processors. Demonstrate micro-photonic coherent components and processors.			
Title: Communications	2.000	2.662	2.840
FY 2011 Accomplishments: (U) Improved the sensitivity of receivers and developed higher bandwidth ultra-low Size, Weight and Power (SWAP) transmitters for optical communications. Developed new materials and resonator cavities for improved eye-safe optical communications.			
FY 2012 Plans: (U) Develop novel materials with improved spectral and spatial filtering for daytime optical communications. Develop high efficiency arrays of photon counting receivers. Investigate distributed algorithms for dynamic networks.			
FY 2013 Plans: (U) Continue development of novel materials for filters and single photon emitters. Develop free space receivers for verifiable, quantum encrypted communications. Develop and test advanced distributed tactical communications with key encryption management.			
Title: Intelligence, Surveillance, and Reconnaissance (ISR)	6.551	5.136	5.414
FY 2011 Accomplishments: (U) Developed multiple ISR payloads for use on a small unmanned aerial system (UAS) platforms. Fabricated and tested a digitally compensated active filter system-on-a-chip. Conducted Red/Blue experiments to explore and understand graph exploitation for network discovery. Demonstrated weak signal detection using Signal Processing for Graphs.			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
(U) Continue development of small, unmanned aerial system (UAS)-based distributed Intelligence, Surveillance, and Reconnaissance (ISR) architecture with multi-intelligence (multi-INT) sensor payloads. Continue development of low Size, Weight and Power (SWaP) reconfigurable Radio Frequency (RF) System on Chip (SoC). Develop compact, low-power, multi-modal active imaging systems. Investigate high-resolution imaging capability using a synthetic aperture ladar. Build and demonstrate a long-endurance solar-powered UAS with high-bandwidth optical downlink technology for relaying real-time high-definition video. ***FY 2013 Plans:*** (U) Develop low SWaP integrated RF/electro-optics systems. Demonstrate multi-mission, Unmanned Aerial Vehicle (UAV)-based sensing, processing and data exploitation for Counter Improvised Explosive Device (IED) applications.			
Title: Net-centric Operations (NCO) ***FY 2011 Accomplishments:*** (U) Implemented and demonstrated a highly resilient messaging service prototype based on a novel distribute and federate approach for tactical edge services. Developed an architecture for machine-based representation and processing of Trust in Net-Centric systems. Implemented an initial software prototype framework for Knowledge Creation Services. ***FY 2012 Plans:*** (U) Continue development of Knowledge Creation Services, to include improved access to massive heterogeneous data sources, resource allocation algorithms, and metadata extraction and linking algorithms. Continue development of algorithms and techniques to implement trusted security of information in net-centric systems. Explore novel techniques to enable operator queries to dynamically modify algorithms. ***FY 2013 Plans:*** (U) All Net-centric activities are being carried forward under application specific areas or will be transitioned to external support. No exclusive FY 2013 effort.	1.605	1.253	-
Title: Air and Missile Defense ***FY 2011 Accomplishments:*** (U) No exclusive FY 2011 effort. ***FY 2012 Plans:*** (U) Investigate advanced concepts for the electronic protection (EP) of radars from digital RF memory (DFRM) jammers using advanced waveform and adaptive signal processing approaches. Explore concepts for a multi-beamforming antenna and receive	-	1.691	1.804

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
architecture to provide extremely high sensitivity for electronic support (ES) functions. Investigate the use of a fully polarimetric laser radar to measure the reflective properties of objects at long ranges in support of target characterization and identification. ***FY 2013 Plans:*** (U) Develop advanced sensor concepts and technologies for the detection, tracking, characterization and discrimination of air and ballistic missile targets. Develop advanced interceptor concepts and technologies. Explore technologies for the dynamic scheduling of sensor and kinetic and electronic weapons resources in complex, time-varying environments.			
Title: Space Control ***FY 2011 Accomplishments:*** (U) No exclusive FY 2011 effort. ***FY 2012 Plans:*** (U) Develop architectures and sensing technologies for satellite-based remote sensing applications. Begin development of micro-satellite payload components and deployment schemes. ***FY 2013 Plans:*** (U) Continue development of novel sensing payloads, focusing on low Size, Weight and Power (SWaP) and high performance. Continue development of micro-satellite-enabled sensing applications with a goal of an FY 2014 experimental launch.	-	1.190	1.270
Title: Information, Computation and Exploitation Sciences ***FY 2011 Accomplishments:*** (U) No exclusive FY 2011 effort. ***FY 2012 Plans:*** (U) Investigate full-motion video analytics, graph analytics and multi-sensor fusion techniques. Develop video analysis tools on wide-area video sensor data from outdoor environments. Prototype novel semantic analytics tailored to internet data sources. Demonstrate automatic 3D construction and exploitation of a multi-intelligence world model. ***FY 2013 Plans:*** (U) Develop a data-intensive cloud analytics infrastructure to enable collection, fusion and exploitation of structured and unstructured datasets. Begin demonstration of large-scale multi-intelligence data fusion, exploitation and visualization for specific application domains.	-	1.472	2.907
Title: Technical Initiatives ***FY 2011 Accomplishments:***	8.613	12.025	12.831

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
(U) Biosciences: Evaluated performance of field-diagnostic platforms and further developed concept of integrated gene synthesis and sequencing platform. Developed advanced signal processing techniques for biomarker depression and anticipatory monitoring. Cybersecurity: Demonstrated advanced cyber warfare test range and cyber mission risk assessment tools. Demonstrated utility of an open architecture anti-tamper hardware. Demonstrated low-artifact network sensing. Autonomous systems: Demonstrated robot convoy leader functions and began development of cognitive robot architecture and algorithms. Quantum Information Sciences: Developed several qubit technologies with improved coherence time for quantum information storage and computation. ***FY 2012 Plans:*** (U) Biosciences: Continue development of novel tools for depression assessment using physiological biomarkers. Continue work on anticipatory monitoring, focusing on epileptic-seizure prediction. Develop platform for gene synthesis under new Synthetic Biology initiative. Cybersecurity: Develop automated mission-relevant cyber risk assessment tools, novel hardware sensors for low-level low-artifact cyber data collection and reference implementations for cyber testing standards. Continue work on flexible anti-tamper architecture and physically unclonable functions. Develop system for assessing Cyber situational awareness, using Lincoln Laboratory network operations. 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. ***FY 2013 Plans:*** (U) Biosciences: Grow techniques and platforms for synthetic biology research, focusing on digital-based gene synthesis. Develop tools and methods for rapid assessment of traumatic brain injury. Develop low Size, Weight and Power (SWaP) tools for physiological load monitoring. Cybersecurity: Continue development of automated mission-relevant cyber risk assessment tools and novel hardware sensors for low-level low-artifact cyber data collection. Promulgate Cyber situational awareness tools to sponsor communities. Autonomous systems: Focus on growth of shared-perception for autonomous systems, cognitive robotics (including demonstration) and multi-unmanned aerial vehicle/unmanned ground vehicle (UAV/UGV) cooperative mission operations. Quantum Information Sciences: Narrow focus of qubit research to one or more competing schemes. Focus on demonstration of multi-qubit computation.			
Title: Decision Support ***FY 2011 Accomplishments:*** (U) Continued development of knowledge building tools to facilitate decision support for the military. Began work on Decision Support architectures for Cybersecurity, including collaborative gameplay exercises. ***FY 2012 Plans:***	1.723	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
(U) All Decision Support activities are being supported within the relevant mission-specific initiatives. No exclusive FY 2012 effort. ***FY 2013 Plans:*** (U) All Decision Support activities are being supported within the relevant mission-specific initiatives. No exclusive FY 2013 effort.			
Title: Homeland Protection ***FY 2011 Accomplishments:*** (U) Developed the critical infrastructure protection effort to include multi-camera tracking and forensics, under a video-analytics project. Evaluated standoff biometric technologies and established a multi-modal testbed. Explored small unmanned aerial vehicle (UAV)-based distributed sensing for border protection. ***FY 2012 Plans:*** (U) All Homeland Protection activities are being supported by other funding sources and agencies. No exclusive FY 2012 effort. ***FY 2013 Plans:*** (U) All Homeland Protection activities are being supported by other funding sources and agencies. No exclusive FY 2013 effort.	1.546	-	-
Accomplishments/Planned Programs Subtotals	27.839	30.385	32.710

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P535: *Technical Intelligence*	3.165	3.295	3.634	-	3.634	3.649	4.306	4.421	4.491	Continuing	Continuing

A. Mission Description and Budget Item Justification

Technical Intelligence supports Assistant Secretary of Defense (Research and Engineering) 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 Sensitive Compartmented Information-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 United States 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 2011	FY 2012	FY 2013
Title: Technical Intelligence	3.165	3.295	3.634
FY 2011 Accomplishments: (U) Continued to focus the JASON studies and Technical Intelligence in areas critical to national security. In 2011 the JASONs completed summer studies touching on a range of topics from electronic warfare and hypersonics to the challenge of loose nukes and a review of the basic research priority areas. The studies have been reviewed for quality and potential to impact programs and lessons learned are being incorporated into formulation of questions for 2012. For the Technical Intelligence portion, some details are classified. A list of capability-based technical intelligence needs were formally provided to the intelligence community with detailed production requirements. Subsequently, baseline assessments of current technical intelligence products were completed. This formalized process has improved both integration of current intelligence into programs and prioritization of future intelligence collection and analysis of relevance the Department. This program continued collaboration with the United Kingdom, Australia, Canada, and New Zealand (invited) to assess the best practices for identifying, assessing, prioritizing and integrating information on emerging and potentially disruptive technologies. Lists from four nations (AUS, CAN, UK, and U.S.)			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

were integrated and topic areas of common interest were identified for case study use. A comparative analysis of analytic tools was initiated and templates for burden sharing on expert analysis were agreed. Data was exchanged under the auspices of The Technical Cooperation Program (TTCP) sharing scientometric studies and expert analysis on topics of mutual interest. Discussions on identifying and assessing 'wild cards' have also been initiated. The program also continued the effort of the 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 sponsored several workshops with an initial focus on large data and computer processing. In coordination with the National Intelligence Manager for Science and Technology and the Defense Intelligence Community the program continued an effort to strengthen science and technology analysis through improved articulation of science and technology requirements and definition of future high impact products.

FY 2012 Plans:

(U) Continue to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies will be focused 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 Science and Technology (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 the 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 2013 Plans:

(U) Continue to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies will be focused 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

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 the 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	3.165	3.295	3.634

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P536: *Testbed for Comparative Analysis*	-	2.928	0.482	-	0.482	0.524	-	-	-	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 2011	FY 2012	FY 2013
Title: Testbed for Comparative Analysis	-	2.928	0.482

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 (for example, 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 2011 Accomplishments:

N/A - New Project in FY 2012

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 (for example, 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 2013 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 (for example, cluster analysis) to identify emerging technology

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
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	-	2.928	0.482

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

TBD

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	-	-	7.898	-	7.898	1.903	-	-	-	Continuing	Continuing
P209: *Systems 2020 Applied Research*	-	-	7.898	-	7.898	1.903	-	-	-	Continuing	Continuing

Note

Systems 2020 will set the technical foundation for the Department's system needs for the next decade. This initiative funds Office of the Secretary of Defense and Service research and development efforts in key technologies and tools for design and development of complex systems. The program seeks to develop enabling technologies that will support the rise of a new class of adaptable systems, and will spawn a new generation of engineering tools and markets that could revolutionize systems engineering practice.

Systems 2020 research initiatives will investigate advanced engineering technologies and provide experimental platforms to assess the feasibility of proposed solutions. These areas include: (1) Multi-dimensional, multi-feature design and engineering tradespace analysis approaches computed rapidly, accurately and within an integrated environment; (2) Techniques to generate multiple alternative designs with data structures enabling modeling of lifecycle implications such as producibility and sustainability; and (3) Novel decision-making techniques that interface engineering and operational data and inputs while guarding against premature or stovepiped design choices. Together these efforts address opportunities to improve system adaptability and will develop techniques to balance design choices against costs for future adaptation precipitated by unexpected threats, changing missions, and disruptive technologies, while operating with far greater speed and agility.

A. Mission Description and Budget Item Justification

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	4.381	1.951	-	1.951
Current President's Budget	-	-	7.898	-	7.898
Total Adjustments	-	-4.381	5.947	-	5.947
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-4.381			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustment	-	-	5.947	-	5.947

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P209: *Systems 2020 Applied Research*	-	-	7.898	-	7.898	1.903	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

Systems 2020 research initiatives will investigate advanced engineering technologies and provide experimental platforms to assess the feasibility of proposed solutions. These areas include: (1) Multi-dimensional, multi-feature design and engineering tradespace analysis approaches computed rapidly, accurately and within an integrated environment; (2) Techniques to generate multiple alternative designs with data structures enabling modeling of lifecycle implications such as producibility and sustainability; and (3) Novel decision-making techniques that interface engineering and operational data and inputs while guarding against premature or stovepiped design choices. Together these efforts address opportunities to improve system adaptability and will develop techniques to balance design choices against costs for future adaptation precipitated by unexpected threats, changing missions, and disruptive technologies, while operating with far greater speed and agility.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Systems 2020 Applied Research	-	-	7.898
FY 2013 Plans: -Conduct Systems 2020 research projects, coordinate with the Services' science and technology leadership and the Service's research, development and engineering centers. Integrate Services' pilot project results and data. Coordinate research agenda with outside agencies such as the National Institute of Science and Technology, and the National Science Foundation. -Perform applied research to enable implementation of candidate Systems 2020 tools, technologies and methods in an integrated laboratory demonstration and evaluation of initial capabilities to accelerate delivery of complex adaptive systems. -Perform applied research to enable implementation of candidate Systems 2020 systems analysis and design engineering tools in an integrated laboratory demonstration that performs within a wide range of architectures and design drivers in the context of dynamic mission and threat conditions. -Perform applied research to enable implementation of Systems 2020 tools that mature a concept-engineering and integrated modeling environment that enables rapid assessment of new material, increases productivity of engineering, design and production processes, and readily incorporates a wide range of mission data for generation of design alternatives.			
Accomplishments/Planned Programs Subtotals	-	-	7.898

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

E. Performance Metrics

TBD

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	-	4.128	13.753	-	13.753	13.796	18.677	18.680	19.021	Continuing	Continuing
P266: *Data to Decisions Applied Research*	-	4.128	13.753	-	13.753	13.796	18.677	18.680	19.021	Continuing	Continuing

Note

The Joint Data Management program will be restructured in FY 2012 to evolve into the revised Data to Decisions program that addresses challenges from the Quadrennial Defense Review and Combatant Commanders. This revised program builds on the FY 2011 accomplishments with increased objectives and technology development goals 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

The 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 five thrust areas in total: cyber-infrastructure, Moving Intelligence (MOVINT) analytics, Text analytics, Imagery Intelligence (IMINT) analytics and User Interactions. MOVINT analytics began in FY 2011; Text Analytics will begin in FY 2012; Cyber-infrastructure, IMINT analytics and User Interactions is planned for FY 2013.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense					DATE: February 2012
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	3.261	9.235	14.139	-	14.139
Current President's Budget	-	4.128	13.753	-	13.753
Total Adjustments	-3.261	-5.107	-0.386	-	-0.386
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-0.079			
• Congressional Adjustments	-3.261	-5.000	-	-	-
• FFRDC	-	-0.028	-	-	-
• Other Program Adjustments	-	-	-0.386	-	-0.386

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P266: *Data to Decisions Applied Research*	-	4.128	13.753	-	13.753	13.796	18.677	18.680	19.021	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Joint Data Management Program will be restructured in FY 2012 to a revised Data-to-Decision program. This Data-to-Decision program includes increased objectives and technology developments critical to on-going operations. The 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 five thrust areas in total: cyber-infrastructure, Moving Intelligence (MOVINT) analytics, Text analytics, Imagery Intelligence (IMINT) analytics and User Interactions. MOVINT analytics began in FY 2011; Text Analytics will begin in FY 2012; Cyber-infrastructure, IMINT analytics and User Interactions is planned for FY 2013.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: MOVINT Analytics	-	2.076	6.916
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 2012 Plans: This FY 2012 new start program will research new strategies for building analytics that are extensible across many cross-Service mission areas. Research will begin on advanced MOVINT analytics to include algorithms for activity-based analytics, start-stop detection. • Research methods to discover and identify threat signatures in complex, incomplete, imprecise and potentially contradictory large MOVINT data sets.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Research activity-based modeling methods node to enable faster and more efficient detection of social networks in wide-area persistent data streams. • Research methods to discover and provide contextual information to the analyst about MOVINT data such as scene location, object movement, and object proximity. • Research methods to reduce uncertainty and reduce the solution space in motion imagery data. • Research new methods to enable rapid development of new motion imagery processing systems. ***FY 2013 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. • Continue to research methods to discover and identify threat signatures in complex, incomplete, imprecise and potentially contradictory large MOVINT data sets. • Continue to research activity-based modeling methods node to enable faster and more efficient detection of social networks in wide-area persistent data streams. • Continue to research methods to discover and provide contextual information about MOVINT data to the analyst such as scene location, object movement, and object proximity. • Continue to research methods to reduce uncertainty and reduce the solution space in motion imagery data. • Continue to research new methods to enable rapid development of new motion imagery processing systems.			
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 2012 Plans:*** This is an FY 2012 New Start. • Understand the state-of-art in language processing and machine translation, identify gaps and conduct research to reduce these technical shortfalls. • 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. • Research information representation methods to enable faster and more efficient detection of social networks in complex, incomplete, imprecise and potentially contradictory large data sets.	-	2.052	6.837

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Research methods to enable analysts to operate more efficiently, leverage non-traditional data sources, and more effectively identify objects of interest. ***FY 2013 Plans:*** • Continue to identify processing and machine translation gaps and conduct research to reduce these technical shortfalls. • Continue to identify gaps in social network discovery and link entity mining tools and conduct research to reduce technical limitations. • Research information representation methods to enable faster and more efficient detection of social networks in complex, incomplete, imprecise and potentially contradictory large data sets. • Research methods to enable analysts to operate more efficiently, leverage non-traditional data sources, and more effectively identify objects of interest.			
Accomplishments/Planned Programs Subtotals	-	4.128	13.753

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• BA 3, PE# 0603663D8Z, P366: *Data-to-Decisions Advanced Development*	3.888	4.117	13.753		13.753	13.796	18.677	18.680	19.021	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Applied Research*							
COST ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	4.538	4.581	18.985	-	18.985	19.041	9.581	9.851	10.030	Continuing	Continuing
P003: *Cyber Applied Research*	4.538	4.581	18.985	-	18.985	19.041	9.581	9.851	10.030	Continuing	Continuing

A. Mission Description and Budget Item Justification

Our military forces require resilient, reliable networks and computer systems 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 focuses on innovative and sustained research in both cyber security and computer network operations to develop new concepts to harden key network and computer components, design new resilient cyber infrastructures, 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 for agile cyber operations and mission assurance.

The Cyber 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 Advanced Technology Development program will build on results of matured applied research from the Cyber Applied Research Program and other programs to develop technology demonstrations for potential transition into capabilities that support the full spectrum of computer network operations. These approaches will include moving from cyber defense to cyber resilience by changing the defensive terrain of our existing digital infrastructure, identifying ways to raise the risk and lower the value of attack from an advanced, persistent cyber threat, and focusing on mission assurance.

This program focuses on integrating computer network defense and computer network operations, addressing the advanced persistent threat, and filling DoD technology gaps as determined by assessments conducted by the Office of the Assistant Secretary of Defense for Research & Engineering (OASD(R&E)) over the past year.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense					DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*			R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Applied Research*		
B. Program Change Summary ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	10.000	9.735	19.519	-	19.519
Current President's Budget	4.538	4.581	18.985	-	18.985
Total Adjustments	-5.462	-5.154	-0.534	-	-0.534
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.300	-			
• SBIR/STTR Transfer	-0.117	-0.122			
• Congressional Adjustments	-5.000	-5.000	-	-	-
• Economic Assumptions	-0.025	-	-	-	-
• FFRDC	-0.018	-0.032	-	-	-
• Other Program Adjustments	-0.002	-	-0.534	-	-0.534

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Applied Research*	PROJECT P003: *Cyber Applied Research*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P003: *Cyber Applied Research*	4.538	4.581	18.985	-	18.985	19.041	9.581	9.851	10.030	Continuing	Continuing

A. Mission Description and Budget Item Justification

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

INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND):
Develop technologies to harden DoD network components; evolve from network defense to mission assurance; and enable systems to operate through cyber attacks in degraded and contested 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 METRICS AND EXPERIMENTATION:
Explore new analytical methodologies, models, and experimental data sets to establish metrics to measure a system's state of security, 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 and repeatable results, and quantitative experimentation and assessment of new cyber technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Cyber Applied Research	4.538	4.581	18.985
Description: The Cyber Applied Research program builds on the existing basic and applied research results and transition new successful applied research results to the Cyber Advanced Technology Development program element. The link between the Cyber Applied Research and Cyber 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. This program focuses on integrating computer network defense and computer network operations, addressing joint problems in cyber operations, and filling capability and technology gaps as determined by assessments in the Office of the Assistant Secretary of Defense for Research & Engineering. Progress and results are reviewed by the DoD Cyber S&T Steering Council. ***FY 2011 Accomplishments:*** Initiated research activities with the specific focuses technical areas of information assurance and computer network defense, computer network operations, and cyber metrics and experimentation. Commenced a semi-annual technical program review			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Applied Research*	PROJECT P003: *Cyber Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
cycle and a series of laboratory-hosted cross-fertilization workshops to enable joint collaboration across DoD S&T organizations and between the defensive and offensive S&T communities. Focuses of each technical area: INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND): -Resilient architectures and protocols to reduce cyber reaction time for rapid system reconstitution to a known secure state and enable critical mission operation through cyber attacks in degraded environments. -Agile cyber operations to enable moving target defense and defensive cyber maneuver. -Attack detection and understanding to reduce, rapidly and autonomously detect, and mitigate attack effects. -Vulnerability discovery and analysis to improve cyber risk assessment, situational awareness, and the impact of cyber assets on missions. COMPUTER NETWORK OPERATIONS (CNO): -Resilient CNO frameworks and architectures. -Wireless discovery and access techniques. -Situational awareness in near real-time during cyber operations. -Agile cyber maneuver to disrupt and confuse adversarial attack planning cycles to increase adversary risk and work factor and decrease effectiveness during adversary attack and exploitation attempts. -Improved understanding of the adversarial threat. CYBER METRICS AND EXPERIMENTATION: -Measurements of effectiveness of existing countermeasures and the current level of DoD cyber security. -Measurements of impacts of new cyber security technologies. -Measurements of computer and network assurance levels for enhanced situational awareness. -Quantitative analysis and experimental testing of the effect of resilient and agile cyber operations and architectures on DoD system and network security.			
FY 2012 Plans: INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND): -Enable interoperability amongst computer network defense and computer network attack software framework capabilities for broader threat mitigation coverage. -Develop analytical model of resiliency of cross-layer protocols and routing techniques in the presence of jamming. -Investigate vulnerabilities in rich content delivery in new implementations of common web browsers.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Applied Research*	PROJECT P003: *Cyber Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
-Test and evaluate existing type-checking, shadow circuits, and other security mechanisms in use by separation kernels. -Investigate optical transport layer vulnerabilities in commoditized critical infrastructure systems, including fiber-optic telecommunications devices. -Develop non-signature-based monitoring and validation methods to accurately convey the integrity of running system software. COMPUTER NETWORK OPERATIONS (CNO): -Development of common protocols and services to enable a common command and control infrastructure and more efficient effects development to enhance existing but disparate computer network operations software frameworks. -Develop and test a time difference of arrival system for tactical wireless emitter localization. -Design and develop algorithms and techniques for data hiding at the physical layer of wireless networks. -Examine the scale and breadth of control that provides adversaries a broad base from which to launch cyber attacks using botnets. CYBER METRICS AND EXPERIMENTATION: -Development of a composite trust metric and mission performance tradeoff analysis for mobile ad-hoc networks (MANETs).			
FY 2013 Plans: INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND): -Investigate impact of cognitive radio technology to increase network resiliency by enabling cross-layer communications. -Define hardware/software interface logic language for many-core processors and systems on a chip to integrate security into automated design flows and run time systems. -Develop improved security framework for optical transport layers in critical infrastructure fiber-optic telecommunications devices to ensure reliability and availability of critical communications networks to both DoD and commercial operators and users. -Develop techniques to employ non-signature-based monitoring and validation methods to make trust decisions on information systems. COMPUTER NETWORK OPERATIONS (CNO): -Decouple programming language-dependent constructs in existing CNO software frameworks to allow for development of clients developed in different languages to operate within the SW architecture. -Investigate and test a hybrid time of arrival and phased array system for wireless localization. -Construct wireless environments for implementing authentication and information hiding schemes at the physical later of wireless networks. -Demonstrate malicious code delivery through audio and video content vulnerabilities new implementations of common web browsers.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Applied Research*	PROJECT P003: *Cyber Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
-Develop techniques to address adversarial botnets in real-time. CYBER METRICS AND EXPERIMENTATION: -Optimization of a composite trust metric and application for risk management and mission performance tradeoff analysis for multiple-objective missions in coalition networks.			
Accomplishments/Planned Programs Subtotals	4.538	4.581	18.985

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• BA 3, PE #0603668D8Z, P113: *Cyber Advanced Technology Development*	4.847	5.539	19.935		19.935	19.995	29.707	30.783	31.342	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	7.199	8.602	6.771	-	6.771	6.923	7.100	7.305	7.438	Continuing	Continuing
P270: *Human Social Culture Behavior (HSCB) Modeling Applied Research*	7.199	8.602	6.771	-	6.771	6.923	7.100	7.305	7.438	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. The Program exists to optimize U.S. forces' ability to perform population-centric sensing, understand behaviors driven by social and cultural variables, and take effective courses of action in the full range of military operations. Program research will enhance intelligence, surveillance, and reconnaissance (ISR) capabilities for understanding the Irregular Warfare environment and meeting the challenges of instability and violent extremism. In three integrated program elements (PEs), the Program will conduct applied research, mature and demonstrate advanced technology, and develop transitionable methods, technology, tools and prototypes. Work under PE 0602670D8Z will focus on developing an applied science base, to include validated theory and methods, along with knowledge products and resources to support sociocultural behavior data collection, analysis and forecasting of sociocultural behavior, course of action planning, and effects analysis. Research will address needs in two areas: modeling, and data. It will develop and validate theoretical constructions, generate knowledge products, and develop stand-alone computational models of sociocultural behavior; and develop improved methods for valid collection of quality sociocultural data that will facilitate subsequent model development and validation. The Program will ensure that supported research is clearly tied to warfighters and their needs.

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

Improved data collection methods will help build the sociocultural science base and facilitate subsequent model development and validation and address emerging data types and sources, such as social media.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	9.499	14.923	17.057	-	17.057
Current President's Budget	7.199	8.602	6.771	-	6.771
Total Adjustments	-2.300	-6.321	-10.286	-	-10.286
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.532	-			
• SBIR/STTR Transfer	-0.198	-0.261			
• Congressional Adjustments	-1.500	-6.000	-	-	-
• Economic Assumptions	-0.041	-	-	-	-
• FFRDC	-0.027	-0.060	-	-	-
• Other Program Adjustments	-0.002	-	-10.286	-	-10.286

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P270: *Human Social Culture Behavior (HSCB) Modeling Applied Research*	7.199	8.602	6.771	-	6.771	6.923	7.100	7.305	7.438	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. The Program exists to optimize U.S. forces' ability to perform population-centric sensing, understand behaviors driven by social and cultural variables, and take effective courses of action in the full range of military operations. In three integrated program elements (PEs), the Program will conduct applied research, mature and demonstrate advanced technology, and develop transitionable tools and prototypes. Work under PE 0602670D8Z will focus on developing an applied science base, to include validated theory and methods, along with knowledge products and resources to support sociocultural behavior data collection, analysis and forecasting of sociocultural behavior, course of action planning, and effects analysis. Research will address needs in two areas: modeling, and data. It will develop and validate theoretical constructions, generate knowledge products, and develop stand-alone computational models of sociocultural behavior; and develop improved methods for valid collection of quality sociocultural data that will facilitate subsequent model development and validation. The Program will ensure that supported research is clearly tied to warfighters and their needs.

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

Improved data collection methods will help build the sociocultural science base and facilitate subsequent model development and validation and address emerging data types and sources, such as social media.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Human Behavior Based Theory and Model Development	2.519	5.265	4.794
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, and databases) that will support population-centric sensing. Apply validation techniques to quantitative models of sociocultural factors in coalition warfare and sociocultural factors of military significance for emerging conflicts. Develop stand-alone models that instantiate social science theoretical constructs to address mission-specific needs to support population centric sensing and warning.			
FY 2011 Accomplishments: Developed flexible, scalable agent-based modeling game engine that handles multiple scales and multiple theoretical disciplines, along with real-world, current example of what it can do. For U.S. European Command (J2), provided analysis framework to support planning of strategic communications and future planning against the extremist ideological threat. Applied model			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
for analysis of extremist rhetoric as part of support to ISAF Network Effects Cell (NEC). Delivered operational support that demonstrated techniques for compensating for sparse data when performing network analysis. Significant contributions to the knowledge base that advances the state of the art in understanding human social cultural dynamics. ***FY 2012 Plans:*** Deliver and test models that can assist in measuring non-kinetic effects, including forecasting instability. Further develop methods and technology for tracking narrative to monitor and mitigate violent extremism. Develop theoretically-grounded methods for analyzing from social media to support situation awareness and forecasting of behaviors. Provide methods to detect and measure changes in population and group sentiment that can be done by U.S. forces. Mature software that supports combining of computational models. ***FY 2013 Plans:*** Demonstrate model-based tools for understanding terrorist networks and tracking the impacts of terrorist communications. Extend and mature computational models for understanding and forecasting violent extremism and instability.			
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 visually and digitally depicting the incomplete, subjective, volatile, and/or imprecise nature of cultural information to support manual and automated analysis. ***FY 2011 Accomplishments:*** In support of International Security Assistance Force Network Effects Cell (ISAF NEC), applied prototypes for visualizing networks and for developing visualization products for analytical reports. Developed techniques for visualizing analysis of extremist narratives. ***FY 2012 Plans:*** Research and identify concepts for human-system interaction (HSI) capabilities that will enable an interactive exploration environment. Continue development of visualization infrastructure that displays hybrid data sources. ***FY 2013 Plans:*** Research on visualization methods discontinued starting FY 2013.	1.800	0.366	-
Title: Sociocultural Competencies and Training Methods ***Description:*** Define sociocultural behavior competencies, tailored to Military Occupational Specialties. Develop conceptual model for sociocultural training of military personnel, including specification of competencies focused on relevant operational scenarios.	1.440	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Develop methods and resources to support training of personnel, including non-experts, in most appropriate and effective use of computational models and model-based tools. ***FY 2011 Accomplishments:*** Provided training materials that leverage archival research on the Soviet Experience in Afghanistan for the ISAF International COIN CT Training Center. Developed set of cross-cultural competencies. Completed study of Military Operational Specialty-specific requirements for sociocultural behavior training. ***FY 2012 Plans:*** Research on training discontinued starting FY 2012.			
Title: Data Collection Methods ***Description:*** Develop scientifically validated strategies to collect cultural and societal information in denied or difficult to penetrate areas. Develop methodologies and supporting technologies capable of extracting relevant data into databases for further modeling to support denied, restricted, or unavailable area sociocultural data. Develop technologies capable of leveraging extracted data, and processing and validating it, with a particular focus on data from social media. ***FY 2011 Accomplishments:*** Collected data from Saudi Arabia, Iran, Lebanon, and Egypt to inspect and explain the extent of the penetration of Western values in those nations. At Cobra Gold Exercise, demonstrated concept for system that models use of social media technologies to support Humanitarian and Disaster Relief operations. Applied network analysis and related tools to enable much more efficient translation of ethnographic data into tools. ***FY 2012 Plans:*** Research novel methods for accurate, non-polling collection of data on sentiment, beliefs, and opinions, especially in denied areas. Work will focus on methods and approaches for harvesting data from social media. Research is required on how representative this information is about a society or social group. Research multi-scale analysis of conflict and stability based upon micro-scale geographical data on violent events and potential causal factors. ***FY 2013 Plans:*** Advance the testing and validation of new methods for collection of data from open source and social media. Develop new techniques for geo-referencing of sociocultural behavior data. Discontinue research and development of an HSCB data collection, analysis and interpretation capability for small units (e.g. platoons, squads).	1.440	2.971	1.977
Accomplishments/Planned Programs Subtotals	7.199	8.602	6.771

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• PE 0603670D8Z BA 3 : *HSCB Advanced Development*	10.299	12.724	8.235		8.235	8.398	8.606	8.853	9.016	Continuing	Continuing
• PE 0604670D8Z BA 4 : *HSCB Research and Engineering*	7.038	7.252	5.131		5.131	5.234	5.355	5.522	5.622	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	14.343	15.606	25.612	-	25.612	27.326	30.539	31.378	31.949	Continuing	Continuing
P002: *Insensitive Munitions Advanced Technology*	13.302	14.529	20.819	-	20.819	20.808	22.521	23.147	23.437	Continuing	Continuing
P301: *Enabling Fuze Advanced Technology*	1.041	1.077	4.793	-	4.793	6.518	8.018	8.231	8.512	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 2013 Office of Secretary Of Defense	DATE: February 2012
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 the 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; and 4) Enabling Fuze Technologies and Common Architecture.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	20.551	24.771	27.458	-	27.458
Current President's Budget	14.343	15.606	25.612	-	25.612
Total Adjustments	-6.208	-9.165	-1.846	-	-1.846
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.072	-0.060			
• Section 8014 - FFRDC	-0.057	-0.105	-	-	-
• Economic Assumptions	-0.079	-	-	-	-
• Other Program Adjustments	-1.000	-	-1.846	-	-1.846
• Congressional Adjustments	-5.000	-9.000	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P002: *Insensitive Munitions Advanced Technology*	13.302	14.529	20.819	-	20.819	20.808	22.521	23.147	23.437	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 2011	FY 2012	FY 2013
Title: High Performance Rocket Propulsion	2.974	3.075	4.232
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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 five, ten, and fifteen 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 2011 Accomplishments:*** • Demonstrated 100 pound propellant processing, validating manufacturing process. Conducted sub-scale IM demonstration in eigh inch composite rocket motors and subjected them to standard IM tests. • Conducted component validation testing. Refined and integrated novel rocket motor design for five inch rocket motor demonstration in preparation for full scale IM demonstration testing. ***FY 2012 Plans:*** • Conduct aging study and full scale IM demonstration tests on new propellant filled rocket cases. Conduct 70 pound BATES motor static test firing to demonstrate propellant performance. • Fabricate five inch rocket motors using novel rocket motor design, and conduct IM testing to include bullet and fragment impact, and fast and slow cookoff. Transition to Navy Future Naval Capabilities. • Contract to manufacture seven inch diameter rocket motor cases using novel technique and load with propellant to support baseline IM testing. ***FY 2013 Plans:*** • Conduct baseline slow cookoff and fragment impact IM testing in seven inch diameter rocket motors. Receive additional rocket motors, prepare and conduct baseline fast cookoff and bullet impact IM tests. Integrate IM mitigation technologies to prepare for additional IM testing.			
Title: Minimum Signature Rocket Propulsion	3.076	3.371	4.629
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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

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 five, ten, and fifteen year goals of the MSP MATG are concentrated on solving the IM response of missile propulsion systems due to Fragment Impact, Slow Cook-Off, and Shaped Charge Jet (SCJ) threats.

FY 2011 Accomplishments:

- Conducted IM tests on composite and metal case motors using baseline propellant to benchmark composite case benefits.
- Scaled up novel propellant formulation to five gallon scale and conducted physical property tests and prepared samples for confinement IM testing.
- Completed mechanism design for unique large rocket motor venting technique.
- Characterized propellant in preparation to conduct slow cookoff testing.
- Completed design of rocket motor thermal ring venting mechanism unique to small rocket motor and container. Down-selected candidate manufacturing materials to prepare to manufacture venting mechanisms.

FY 2012 Plans:

- Conduct slow cookoff and fragment impact reliability testing of motor designs. Manufacture test motor hardware and conduct propellant down-select testing.

Prepare, load, and conduct IM tests on propellant candidates in metal and composite cases, for direct comparison with baseline propellants. Scale up additional novel propellant formulation to five gallon scale and conduct physical property tests and prepare samples for seven inch rocket motor testing.

- Refine vent mechanism design, manufacture and test components to validate precision and accuracy. Conduct slow cookoff testing on large scale motor.
- Conduct aging and environmental tests of rocket motor thermal ring venting mechanism. 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.
- Manufacture and conduct characterization testing of unique propellant for man-portable weapons with minimum signature and operator-friendly properties.

FY 2013 Plans:

- Load demonstrator motor with down-select propellant formulation, incorporate case enhancements and prepare to conduct IM tests.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Complete full scale slow cookoff and fragment impact testing of unique propellant for man-portable weapons with minimum signature and operator-friendly properties. • Conduct full scale motor static tests of IM propellants. Prepare to demonstrate reduced sensitivity minimum signature propellant IM and ballistic properties in full scale test and transition to 6.4 Insensitive Munition Technology Transition Program.			
Title: Blast and Fragmentation Warheads	4.933	3.141	7.203
Description: Blast and Fragmentation Warheads (BFW) - Focus 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 five, ten, or fifteen year goals of the BFW MATG are concentrated on solving the IM response of blast fragment warheads to the Sympathetic Detonation, Fast Cookoff and SCJ threats. ***FY 2011 Accomplishments:*** • Completed 500 pound bomb explosive fill and unique manufacturing optimization to prevent sympathetic detonation, and started loading of assets to prepare for shipment for testing. Item two (10-3-10) IM Focused Energy Initiation - Begin integrated demonstration of new initiation system with less-sensitive explosive fills. • Loaded various mortars with down-selected formulation candidates and conducted IM tests using various manufacturing methods, comparing results to current fielded munitions. • Completed fabrication and environmental testing of new initiation system for very insensitive main charge explosive fills. Started validation testing using unique explosives to ensure functionality of initiator. • Scaled-up and manufactured explosive booster materials in 30-40 pound batches and conducted pressing study to prepare pellets for testing. ***FY 2012 Plans:*** • Conduct full scale IM and performance tests on unique 500 pound bombs and complete manufacturing study to prepare for selection of final candidate for transition to responsible program manager. • Complete validation testing using unique explosives to ensure functionality of initiator.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Complete initiation system environmental survivability testing and prepare for IM tests using system level hardware. • Conduct characterization tests to ensure purity and particle size of materials. Conduct environmental and IM tests to include full scale slow cookoff test in various warhead sizes. • 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 2013 Plans:*** • Complete large scale testing of initiator using novel explosive. Fabricate initiation systems and conduct IM tests using system level hardware to transition to IM technology transition program. • Conduct formulation refinements and subscale IM tests. Prepare assets for full-scale IM tests. • Integrate initiation designs with explosive fill candidate and conduct small-scale tests as well as full Bucket Test series.			
Title: Anti-Armor Warheads	1.174	2.521	2.457
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 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 five, ten, and fifteen 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 five year goal of solving Sympathetic Detonation threats, with a five to fifteen year goal of resolving the IM response to the Shaped Charge Jet threat. ***FY 2011 Accomplishments:*** • Completed fragment impact testing on tactical hardware using impact mitigation technology proving validity of the technology. • Conducted modeling and simulation on candidate barrier materials and down-selected barrier material candidates to test.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Integrated design and test hardware selection to complete explosive candidate selection and began subscale testing preparations. ***FY 2012 Plans:*** • Load hardware and conduct IM and performance tests to validate performance and finalize recommended solutions for transition to a program of record. • Optimize phase one designs based upon small and large warhead tests. Conduct modeling and simulation of phase two designs and optimize design for fast and slow cookoff and bullet and fragment impact testing. ***FY 2013 Plans:*** • Fabricate optimized design, and conduct engineering and penetration testing. Load large and small warheads and conduct full scale fragment and bullet impact and fast and slow cookoff tests using selected explosives. • Conduct modeling and simulation down-selection of candidate technologies to determine fragment impact technologies suitable for higher velocity munition requirements.			
Title: Large Caliber Gun Propulsion	1.145	2.421	2.298
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, 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 five, ten,and fifteen 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 2011 Accomplishments:*** • Optimized propellant formulations, manufactured propellant, and conducted initial safety tests using new propellant formulation. Optimized and manufactured primer and conducted aging studies. Conducted propellant initial IM and gun testing with full scale representative articles. ***FY 2012 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Conduct primer testing and final IM testing of propellant and primer optimization formulations less sensitive to fragment impact, shaped charge jet impacts and slow and fast cookoff.			
FY 2013 Plans: • Conduct initial container venting design, manufacture, and tests. • Develop tactical primer designs based upon unique primer tube technologies and conduct initial IM tests. • Integrate novel insensitive propellant technologies to develop propellant charge for new gun system.			
Accomplishments/Planned Programs Subtotals	13.302	14.529	20.819

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0602000D8Z P000: *BA2 Insensitive Munitions*	14.177	14.495	14.216		14.216	14.449	14.858	15.466	15.675	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) Projects 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 are conducted as part of Joint Army/Navy/NASA/Air Force meetings.
7) Technology Transition Agreements are in place with Munition programs.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P301: *Enabling Fuze Advanced Technology*	1.041	1.077	4.793	-	4.793	6.518	8.018	8.231	8.512	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 Technical 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 2011	FY 2012	FY 2013
Title: Hard Target Fuzing	0.324	0.328	1.123
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 Accomplishments: - Continued development of 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 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- 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. ***FY 2013 Plans:*** - Incorporate and demonstrate fuze recorders in high speed and boosted penetration weapon tests. - Continue to develop survivable modular fuze technology for application into 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; MicroElectro-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 Accomplishments:*** - Developed 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 yield warhead initiation architecture and control technologies into candidate warheads designs. - Complete development of advanced micro-transformer technology and transition into miniature high voltage firing systems. ***FY 2013 Plans:*** - Conduct demonstration tests of selectable yield warhead initiation architecture and control technologies into warheads. In particular, Army Technology Objectives (ATOs) related to tailorable 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.	0.388	0.430	1.220
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	-	0.119	1.310

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
reliability expectations and harsher weapon system operational requirements are dictating the need for higher fuze reliability than available using current technologies. ***FY 2011 Accomplishments:*** - Researched, developed and demonstrated MEMS device components and fabrication processes for future cluster munitions fuze applications. - Developed and build test phase one high reliability fuze architecture technology prototypes that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. ***FY 2012 Plans:*** - Continue research, development and demonstration of MEMS device components and fabrication processes for future cluster munitions fuze applications. - Continue development and build test phase one high reliability fuze architecture technology prototypes that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. ***FY 2013 Plans:*** - Develop and build phase two 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) five.			
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 Accomplishments:*** - Fabricated and tested first phase MEMS retard and impact sensors and conduct functional testing in simulated environments. - Applied 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. ***FY 2012 Plans:*** - Build and test second phase miniature retard and impact sensors for bomb and air dropped munitions. Testing will be in relevant environments simulating bomb deployment.	0.329	0.200	1.140

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Conduct functional and safety assessment and testing of common fuze architecture technologies: safety components, modular electronics, sensors, interfaces, and packaging. ***FY 2013 Plans:*** - Conduct air-drop demonstration testing miniature retard and impact sensors. Transition sensor technology into bomb fuzing applications. - Begin advanced, exploitation resistant proximity sensor advanced technology development.			
Accomplishments/Planned Programs Subtotals	1.041	1.077	4.793

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0602000D8Z P204: *BA2 Enabling Fuze Technology*	5.740	5.833	6.398		6.398	6.367	7.028	7.211	7.418	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.
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 Technical Advisory Committee (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 are in place with Munition programs.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	43.525	44.199	26.324	-	26.324	19.544	9.952	-	-	Continuing	Continuing
206: *Explosive Ordnance Disposal/ Low-Intensity Conflict*	7.487	7.520	4.544	-	4.544	3.374	1.718	-	-	Continuing	Continuing
207: *Special Reconnaisance Capabilities*	19.644	20.474	12.239	-	12.239	9.087	4.627	-	-	Continuing	Continuing
208: *Information Dissemination Concepts*	2.461	3.175	1.919	-	1.919	1.425	0.725	-	-	Continuing	Continuing
209: *Irregular Warfare Support (IWS)*	13.933	13.030	7.622	-	7.622	5.658	2.882	-	-	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).

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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	44.423	45.028	45.869	-	45.869
Current President's Budget	43.525	44.199	26.324	-	26.324
Total Adjustments	-0.898	-0.829	-19.545	-	-19.545
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.493	-0.528			
• Other Program Adjustments	-0.179	-0.301	-19.545	-	-19.545
• Economic assumption	-0.226	-	-	-	-

Change Summary Explanation

The FY 2013 baseline budget was reduced due to fiscal constraints and higher priorities within the Department.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
206: *Explosive Ordnance Disposal/ Low-Intensity Conflict*	7.487	7.520	4.544	-	4.544	3.374	1.718	-	-	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 2011	FY 2012	FY 2013
Title: Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC)	7.487	7.520	4.544

FY 2011 Accomplishments:

Evaluated shaped charges to defeat buried IEDs. Developed an EOD expeditionary capability for the identification and detection of homemade explosives and precursor materials. Developed and validated a program of instruction for advanced IED defeat techniques for SOF EOD operators. Demonstrated a stabilized weapons system module for low-profile combatant craft. Demonstrated a handheld jamming effectiveness tester device capable of both analyzing signals within the range of common jamming systems and indicating whether the user's point of measurement is within the protective area of a nearby Electronic Countermeasure Measure (ECM) system. Demonstrated a portable, battery-powered active jamming device capable of defeating multiple Remote Controlled Improvised Explosive Device (RCIED) threats within a confined space by tossing one or more of the softball-sized devices into the space, similar to standard grenades.

FY 2012 Plans:

Develop tools and equipment to enhance situational awareness and operational capability during incident response or direct action operations. Develop an EOD Helmet Liner that allows an operator to optimize fit of an EOD helmet in a deployed setting with minimal support equipment. Develop an electromagnetic, non-lethal capability to disrupt outboard engines of small craft. Design a compact, high-power next generation x-ray generator for EOD use. Design a radio repeater system for robotic platforms. Improve missile launch pod design for use on unmanned surface vehicles.

FY 2013 Plans:

Test an EOD Helmet Liner that allows an operator to optimize fit of an EOD helmet in a deployed setting with minimal support equipment. Demonstrate an electromagnetic, non-lethal capability to disrupt outboard engines of small craft. Evaluate a compact,

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
high-power next generation x-ray generator for EOD use. Demonstrate and optimize a radio repeater system for robotic platforms. Demonstrate a remote missile launch pod module for use on unmanned surface vehicles or other small craft.			
Accomplishments/Planned Programs Subtotals	7.487	7.520	4.544

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
207: *Special Reconnaisance Capabilities*	19.644	20.474	12.239	-	12.239	9.087	4.627	-	-	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 2011	FY 2012	FY 2013
Title: SPECIAL RECONNAISANCE CAPABILITIES	19.644	20.474	12.239
FY 2011 Accomplishments: SRC continued to identify, develop, integrate, and field promising persistent intelligence, surveillance, and reconnaissance (ISR) advanced technologies and capabilities. High payoff technologies that have been 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: 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 2013 Plans: Continue to identify, develop, integrate, and field promising persistent intelligence, surveillance, and reconnaisance (ISR) advanced technologies and capabilities. High payoff technologies that will be researched and transitioned include: audio and			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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	19.644	20.474	12.239

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
208: *Information Dissemination Concepts*	2.461	3.175	1.919	-	1.919	1.425	0.725	-	-	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 2011	FY 2012	FY 2013
Title: INFORMATION DISSEMINATION CONCEPTS	2.461	3.175	1.919
FY 2011 Accomplishments: Enhanced language learning tools' capabilities. Adapted and integrated existing foreign language applications, practices, and tools into a tactical site exploitation capability. Improved the timely collection of intelligence and evidence to support follow-on targeting, effective detainee prosecution, and theater-wide exploitation of tactical intelligence. Deployed capabilities to enrich language packet creation with a variety of media sources. Delivered a capability that supports the automated inbound and outbound integration of available video and audio sources. Developed 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.			
FY 2013 Plans: Enhance cultural and language technologies for military educational purposes. Implement multilingual and multimedia technologies in support of language learning for operational deployment. Rapidly exploit speech from large volumes of sources in foreign languages. Deliver analytic and linguistic tools for operators. Field capabilities for collecting and analyzing media sources and evidence.			
Accomplishments/Planned Programs Subtotals	2.461	3.175	1.919

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
209: *Irregular Warfare Support (IWS)*	13.933	13.030	7.622	-	7.622	5.658	2.882	-	-	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 2011	FY 2012	FY 2013
Title: IRREGULAR WARFARE SUPPORT (IWS)	13.933	13.030	7.622
FY 2011 Accomplishments: Continued and expanded Project LEGACY, significantly improving host-nation police counterinsurgency and intelligence capabilities. Due to revocation of external funding, closed out Project CROWDED HOUSE, which reduced insurgent Improvised Explosive Device (IED) activity through local, indigenous rural development projects. Expanded Project LOCHAN, increasing Special Operations Forces (SOF) and Interagency Irregular Warfare knowledge management, communications and C2 capability through rapid adaptation, experimentation and fielding of Commercial Off The Shelf (COTS)/ Government Off The Shelf (GOTS) software, hardware tools and novel concepts. Evaluated pilot project for alternative command and control structures in counterinsurgency and other Irregular Warfare organizations (Project MURRAY). Conducted irregular warfare mission analysis and experimentation (Project WALLIS) to enhance shared understanding and synchronize interagency irregular warfare/ operations integration efforts. Conducted counter-radicalization research efforts to erode adversaries' power, influence, and will through indirect communications support, research into health diplomacy, law fare, and initiatives designed to engage populations at-risk of violent radicalization. Developed and monitored emerging solutions for low cost aviation support for small units conducting distributed operations in remote and austere environments. Explored new concepts for non-standard aviation support to SOF in Irregular Warfare environments. Actively built and expanded a Countering Violent Extremists (CVE) community of interest. Enhanced IW Pursuit and Denial capabilities through analysis of threat supply chain and alternate finance/value transfer methodologies to help identify, disrupt, deny, and destroy hostile organizations and their supporting enterprises (Projects MEIWA, BANIAN, and REVOLVER).			
FY 2012 Plans: Research and develop promising capabilities and continue current project development, delivery, and transition to support the Department of Defense and Interagency Irregular Warfare mission. Continuing under IW Joint Operational Concept (JOC 2.0)			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
and DODD 3000.07 on IW, the research and development path will conduct operational analysis, concept design, and pilot-project experimentation efforts in support of 2010 QDR and current NSS/NSCT lines of engagements. Pursue, prevent and deter conflict through analysis that supports U.S. diplomatic and development efforts to foster a range of governance efforts 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. Assess effectiveness of current Irregular Warfare 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 intelligence analysis, methodologies and operational solutions. Continue to elicit and refine requirements for users within rapid assessment framework in order to successfully pair SOF and Interagency users with off the shelf, high performance technologies and novel capabilities that fulfill specific requirements to share and analyze operational data better and faster (Project LOCHAN). Research, develop and demonstrate solutions for low cost aviation support for small units conducting distributed operations in remote and austere environments. Assess relevance and applicability of Project LEGACY doctrine and operational approach for operational environments outside Operation Enduring Freedom. Identify adaptation and/or transition opportunities from research and development investments to include other areas of potential threat and engagement with hostile organizations and supporting structures. ***FY 2013 Plans:*** Research and development of material and non-material solutions, promising capabilities, and continuation of project development, delivery, and transition to support the Department of Defense and Interagency Irregular Warfare mission. Continue to elicit and refine requirements for users within rapid assessment framework in order to successful pair SOF and Interagency users with off the shelf, high performance technologies that fulfill specific requirements to share and analyze operational data better and faster (Project LOCHAN). Research, design and spiral development of 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 and Operation Enduring Freedom (LEGACY). Continue research and development of non-material approaches to deterring/countering violent extremism and radicalism to include international partners and sharing of lessons learned and best practices. Design and develop enhanced training in support of DOD, International and Interagency IW mission.			
Accomplishments/Planned Programs Subtotals	13.933	13.030	7.622

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*

E. Performance Metrics

N/A

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	90.211	74.586	77.144	-	77.144	78.291	79.831	82.298	83.793	Continuing	Continuing
484: *Combating Terrorism Technology Support (CTTS)*	90.211	74.586	77.144	-	77.144	78.291	79.831	82.298	83.793	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	82.486	77.019	89.298	-	89.298
Current President's Budget	90.211	74.586	77.144	-	77.144
Total Adjustments	7.725	-2.433	-12.154	-	-12.154
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	7.725	-			
• SBIR/STTR Transfer	-	-1.919			
• Other Adjustments	-	-0.514	-12.154	-	-12.154
• Congressional Adds	-	-	-	-	-
• Economic Assumptions	-	-	-	-	-

Change Summary Explanation

The FY 2013 baseline budget was reduced due to fiscal constraints and higher priorities within the Department.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Advanced Analytic Capabilities	7.723	3.660	3.785

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Deployed and evaluated an integrated fusion and analysis platform that enables analysts and operators to store, organize, access, retrieve and analyze massive amounts of intelligence information from disparate data sets. Incorporated geospatial data extraction and viewing capabilities to the CANVAS knowledge discovery tool that will enable analysts to search and filter geographically as well as contextually. Integrated a model-predictive controller into an existing course of action development and analysis work station that enabled analysis of parameter sensitivities and the identification of equilibria solutions. Developed an advanced secure industrial control system with features to include whitelisting, authentication server and encryption of data from the remote terminal units and on the server. ***FY 2012 Plans:*** Deliver the results of an independent capability assessment of an operational integrated fusion and analysis platform that enables analysts and operators to store, organize, access, retrieve and analyze massive amounts of intelligence information from disparate data sets. Integrate a knowledge discovery tool with geospatial data extraction and viewing capabilities into operational platforms to support intelligence analysis and operational decision making. Continue spiral development of integrated analytic platforms to enhance analysis of diverse and disparate data sources to support near real-time decision making for specific operational applications. Independently test and verify the advanced secure industrial control system. Develop an advanced audit tool to determine over network or serial communications the security configuration settings on field devices in industrial control systems. Begin development of a multi-intelligence data fusion and analysis capability for automated behavior and activity identification and exploitation. Develop proof of concept data and network analysis workbench for rapid analysis and understanding of collections of intelligence reports and real-time generation of alarms and warnings for suspicious activity based on incoming streams of surveillance and intelligence data. ***FY 2013 Plans:*** Continue to integrate a knowledge discovery tool with geospatial data extraction and viewing capabilities into operational platforms to support intelligence analysis and operational decision making. Deliver an advanced audit tool to determine over network or serial communications the security configuration settings on field devices in industrial control systems. Deliver an initial version of prototype software that enables fusion of imagery and text-based data for patterns of life analysis. Independently test and verify a proof of concept data and network analysis workbench for rapid analysis and understanding of collections of intelligence reports and real-time generation of alarms and warnings for suspicious activity based on incoming streams of surveillance and intelligence data. Adapt and enhance an integrated analytic platform that enable analysis of diverse and disparate data sources to support near real-time decision making to support new operational applications and geographic locations.			
Title: CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR COUNTERMEASURES	7.239	6.960	7.199
FY 2011 Accomplishments:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
Developed a new design for protective garments that provide percutaneous protection against evolving threats. Performed heat stress studies on a combination of Chemical, Biological, Radiological, and Nuclear (CBRN) and Explosive Ordnance Disposal (EOD) protective ensembles. Developed new materials for targeted removal of toxic industrial chemicals for use in collective protection filters. Developed a design for a hose system to allow users to switch between supplied air and air purifying respiratory protection modes of operation without requiring doffing and donning of a separate mask. Developed noise cancelling technology that enhances communication for a person wearing a self contained breathing apparatus in a CBRN environment. Evaluated a pocket-size, low-profile escape respirator for operational needs and tested using certification requirements for Respiratory Protective Devices for Self-Rescue and U.S. NIOSH CBRN air purifying escape respiratory protection requirements for specific high threat agents. Developed a desalination filter for rendering estuary waters potable that has silent operations and requires no external pumping or power sources. Developed a person portable mass spectrometer with gas chromatograph inlet for the rapid detection and identification of target chemicals. Developed two handheld orthogonal detection systems for detecting trace levels of toxic industrial chemical challenges. One system targets gas and vapor phase materials while the other targets liquids and solids. Tested and evaluated a detection kit for homemade explosive precursor materials. Developed a risk-based decision support model for skin decontamination following dermal exposures. Fielded a best practices guidebook for mail screening and handling.			
FY 2012 Plans: Develop new materials for collective protection. Develop a flexible powered air purifying respirator system for CBRN environments. Develop enhanced testing procedures that are used to evaluate protective ensembles. Perform heat stress studies on new CBRN protective ensembles. Test and evaluate inconspicuous protective garments against evolving threats. Develop, test, and field protective ensembles that will provide enhanced CBRN protection in tactical environments. Continue development and operationally test and evaluate a water desalination filter for military field survival situations. Develop and evaluate tools for the decontamination of infrastructure, personnel, and equipment. Test and evaluate new materials for field decontamination methods with reduced logistical burden. Field a prototype and conduct limited user evaluations on an orthogonal system for the detection and identification of trace levels 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. Develop methods for determining the origin of CBRN materials. Evaluate potential methods of production of threat materials, and identify key indicators and warnings for response personnel.			
FY 2013 Plans: Evaluate next generation systems for respiratory and collective protection. Evaluate enhanced testing procedures for the evaluation of protective ensembles. Develop, test, and field protective ensembles providing enhanced CBRN protection in tactical environments. Develop tools for the standoff detection of chemical, biological, and radiological materials. Evaluate tools for the decontamination of infrastructure, personnel, and equipment. Continue development of methods for determining the origin of CBRN materials. Evaluate potential methods of production of threat materials, and identify key indicators and			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
warnings for response personnel. Develop methods for the evaluation of CBRN contaminated evidence. Develop decision support tools to provide science-based risk analysis for emergency personnel in the selection of appropriate protective equipment, decontamination techniques, evacuation zones and other data-driven decisions. Develop training tools for CBRN operations.			
Title: EXPLOSIVES DETECTION ***FY 2011 Accomplishments:*** Incorporated fusion and detection algorithms, synchronized electronics, and demonstrated the feasibility of an active illumination upgrade to an imaging and anomaly detection system. Developed a breadboard sub-millimeter wave imaging and anomaly detection system. Collected spectra of explosive signatures for later incorporation into existing databases. Developed and assessed prototype expeditionary wet chemical kits for explosives precursor detection. Developed and tested a walkthrough explosives detection portal. ***FY 2012 Plans:*** Continue development with the incorporation of 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. Continue development with the fabrication and assessment of prototype expeditionary wet chemical kits for explosives precursor detection. Assess feasibility of explosives detection technology for monitoring cargo containers. Develop training packages for deployed personnel that use explosive detection equipment. ***FY 2013 Plans:*** Continue development by testing a prototype of an orthogonal sensor standoff system. Fabricate and test sub-millimeter wave imaging of personnel for explosive detection. Continue assessment of prototype expeditionary wet chemical kits for homemade explosives detection. Develop a portable system to quickly screen personnel for explosive threats at temporary venues.	7.684	6.714	6.944
Title: IMPROVISED DEVICE DEFEAT ***FY 2011 Accomplishments:*** Developed threat documents and requirements for next generation Electronic Counter Measures (ECM)-related equipment to counter radio controlled improvised explosive devices (RCIED). Incorporated final modifications and delivered the robotically employed Single-Sided X-ray Imaging System (SSIS). Developed and delivered initial prototypes of enhanced manual entry, capability for access, and diagnostics of terrorist devices. Developed advanced detection and diagnostic tools for support of mass transit incidents involving acts of terrorism. Field-tested and evaluated ECM tools and equipment to counter emerging remote controlled improvised explosive device (RCIED) threats. Developed, delivered and commercialized a VBIED Precision Identification, X-ray Targeting and Disruption Tool Kit. Developed tools and methods to neutralize homemade explosives. Field-tested and evaluated the robotically deployed VBIED access tool kit. Delivered, evaluated, and commercialized the camera blinding system. Delivered the Body Bomb Tool Kit for evaluation. Delivered and evaluated affordable robust mid-sized	5.036	4.252	4.398

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
unmanned ground vehicles (UGV) for defense and homeland security applications. Developed the Multi-Purpose Tele-Scoping Hotstick to conduct remote Explosive Ordnance Disposal (EOD) procedures. Tested and received safety approval for the Carbon 10 Light Disruptor for dismounted EOD operations. ***FY 2012 Plans:*** Develop and evaluate a tool caddy for the Body Bomb Tool Kit. Develop a Bomb Technician Wikipedia (WIKI). Develop a video enhancement module for robot cameras. Complete development and commercialize the Scalable Improvised Device Disruptor to counter Vehicle-Borne Improvised Explosive Device (VBIED). Develop an Improvised Explosive Device (IED) Instant Notification System application. Test common disruptors against homemade explosives (HME). Develop robotically employed forensic collection tools for explosives and other hazardous materials. Evaluate modular disruptors for dismounted operations. Deliver improved end effectors for remote controlled vehicles. Deliver advanced diver display systems. Deliver DIDSON-DH diver mask-mounted display systems for underwater MCM operations. ***FY 2013 Plans:*** Complete development and commercialize the robotically employed Body Bomb Tool Kit. Deliver the Bomb Technician WIKI. Continue development with the evaluation of the video enhancement module for robot cameras. Continue development with the characterization of the Scalable Improvised Device Disruptor and the Dilute Explosive Blast Innovative Tool to counter VBIED. Develop Robotic End Effectors for the Bob Cat to access and counter Vehicle-Borne Improvised Explosive Device (VBIED). Commercialize the VBIED Tool Kit. Develop a robot radio repeating system. Test and evaluate the forensic collection tools for explosives and other hazardous materials.			
Title: INVESTIGATIVE SUPPORT AND FORENSICS	4.325	4.575	4.732
FY 2011 Accomplishments: Completed development and distributed a trace explosive materials reference and pocket guide. Completed development and deployed a remote viewer for evidence manipulation and comparison for use between theatre and U.S. based labs. Completed development and distributed soil location identification techniques. Completed development of advanced forensic methods that provide forensic bomb render safe procedures to protect potential evidence. Produced a forensic document analysis evaluation to aid criminal prosecutions. Distributed advanced computer forensic technologies. Completed development and fielded a combating terrorism and reliability software assessment tool. Developed advanced techniques for efficient direct interpersonal credibility assessments through thermal imaging. ***FY 2012 Plans:*** Establish an online accessible forensic video player examination reference system. Evaluate the efficiency and accuracy of facial expression credibility systems. Initiate the development of an advanced facial expression recognition system for credibility assessment. Continue development by fielding a thermal analysis of physiology technology for detection of deception. Establish a new procedure for detection and verification of altered and tampered terrorist related audio recordings. Continue development			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
of an automated system to examine and evaluate shoeprints. Complete development of a combating terrorism analysis reporting technology for the individual and group level. ***FY 2013 Plans:*** Complete development and field an automated digital communication analysis system to determine insider threats. Initiate development of an advanced separation method for complex DNA mixtures for forensic identification. Complete development and field a technology to extract latent images from printer ribbons. Initiate development of an advanced technology to decrypt computer passwords. Complete development and field a system for rapid extraction and storage of data from optical media. Initiate development of advanced computer forensics capabilities. Complete development and field an improved credibility assessment technology.			
Title: PERSONNEL PROTECTION	8.688	8.457	8.747
FY 2011 Accomplishments: Deployed the high-risk personnel tracking and locating device for domestic and overseas use. Deployed the protective services portal training system at federal law enforcement training centers and deployed the standalone protective services portal. Provided the Personnel Security Decision Aid tool for use by government protective details. Tested and certified the canine armor system for use by military working dogs. Developed a total body deformation tool to provide analysis in the development of protective solutions for vehicles, ships, and buildings. Tested and validated the emergency response capabilities of alternative fuel vehicles. Developed a novel multi-threat concealable body armor system. Installed the window tinting system in an armored passenger vehicle and assessed improvements in information security and reduction in focused attack accuracy. Developed a new test device that determines the behind armor blunt trauma of body armor systems. Developed a new limit for the backface signature limit to reduce behind armor blunt trauma injuries. ***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 for the development of protective solutions for vehicles, ships, and buildings. Develop 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. Complete and incorporate the results 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. Test and validate the performance of a novel material to collect fragmentation during a blast event. ***FY 2013 Plans:*** Deploy the mobile surveillance platform to gain situational awareness from moving platforms and man-portable assets. Deliver an optimized multi-threat concealable armor for operational deployment. Test and validate a system for vehicle protection in crowds.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
Deploy the canine armor system for use by military working dogs. Deliver a new test fixture for the validation of the performance of body armor. Deploy systems to enhance situational awareness, intelligence collection capabilities, and personnel recovery efforts. Deliver a blast resistant material to be used as a tent liner for enhanced protection.			
Title: PHYSICAL SECURITY	15.320	10.676	11.042
FY 2011 Accomplishments: Coordinated test program results to determine best solutions for temporary, semi-permanent, or permanent facilities and deployed decision aids to assist with pre-event, preventative planning. Provided test data and results for pipeline blast mitigation and internal hazards due to an external blast. Coordinated design standards with appropriate government agencies for increased force protection. Continued development of an ongoing test program in an urban environment to include novel explosives. Completed the development and deployed tactical and integrated security system concepts. Completed and deployed a comprehensive homemade explosives database with multiple levels of access. Developed and deployed capabilities to detect, locate, survey, and disrupt subterranean operations. Demonstrated and delivered a system that provides enhanced night vision capabilities to austere outposts. Provided advanced physical security technologies for operational assessments, field training, and operational support that satisfy urgent requirements in support of deployed forces. Developed and delivered a portable seismic/ acoustic sensor for use in multiple environments. Continued development by upgrading the underwater remotely operated vehicle capabilities for use in ship hull and harbor searches.			
FY 2012 Plans: Continue development of a test program in an urban environment using modular configurations to represent urban environments to better understand the impact of fixed urban structures on blast wave propagation for conventional explosives and enhanced novel explosive mixtures. Demonstrate a fast running computational tool to assist DoD and first responder personnel in predictive blast analysis in an urban environment. Field test enhanced video assessment and tracking techniques. Operationally test and evaluate a next generation Short Wave Infrared (SWIR) capability for use in tactical environments. Complete construction of an integrated test facility for technology demonstrations and pre-operational testing. Develop and field test a portable persistent surveillance system for covert emplacement and enhanced tracking of potential illegal activity. Complete development and transition a security system that contains a camera observation system and a sensor alarm system coupled in an integrated package for concealable installation. Develop and deliver a system to clear a path in a compromised area during dismounted operations. Demonstrate an integrated, mobile screening capability for explosives detection. Support site security implementation and execution for austere military installations, high profile CONUS sites, and large scale events hosted by our international partners. Continue development of a rocket detection system that provides warning time sufficient to find cover.			
FY 2013 Plans: Complete testing in an urban environment and provide data/test results. Complete development of novel explosive characterization and provide test results. Complete development and deliver a prototype rocket detection system that provides			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
enough warning time to find cover. Complete development and deliver a prototype for on-the-move, standoff IED detection. Complete development and deliver a prototype for standoff underground void and tunnel detection. Develop capabilities in the areas of Border Protection, Countering Offensive Tunnel Tactics, Video Analytics, Intelligent Sensor Fusion, Simplified Integrated Interface, Securing Green Initiatives, and supporting the security of large scale public events.			
Title: SURVEILLANCE, COLLECTION AND OPERATIONS SUPPORT ***FY 2011 Accomplishments:*** Adapted and integrated existing foreign language applications, practices, and tools into a tactical site exploitation capability. Improved the timely collection of intelligence and evidence to support follow-on targeting, effective detainee prosecution, and theatre-wide exploitation of tactical intelligence. Enhanced the capability to identify targets through biometric modalities. Streamlined the processes of data collection, sharing, identity management, mobile identification, and detection of targets of interest. Developed enhanced capabilities, force structures, and training programs to leverage Information Operations capabilities. ***FY 2012 Plans:*** Develop and deliver field technical surveillance capabilities. Develop and improve operational tactics, techniques, and procedures used by military working dog teams. Complete the development and deploy expeditious foreign language analytical tools in support of tactical exploitation. Continue development and 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. ***FY 2013 Plans:*** Continue to develop and enhance technical surveillance capabilities. Continue to improve military working dog scent kits for training and operational tactics, techniques, and procedures. Develop a method to integrate foreign language analytical tools into agile workflow platforms and media monitoring systems. Develop capabilities, force structure, and training programs to leverage information operations and technical site exploitation efforts. Utilize Unmanned Aerial Vehicles platforms as novel communication relay nodes.	15.796	14.457	14.953
Title: TACTICAL OPERATIONS SUPPORT ***FY 2011 Accomplishments:*** Initiated and completed development of an ultra-mobile tactical computer for use by ground forces. Initiated and completed development of a personnel, equipment, and vehicle visual and thermal signature reduction material that is scalable, lightweight, compact, and low cost. Initiated and completed development of low-cost systems for the exploitation of commercial electronics, communications, and computing for special reconnaissance. Completed development of an organic fixed-site mortar targeting system with an integrated Fire Control System that provides rapid and accurate indirect fire solutions and translates that to auto-	12.523	9.985	10.327

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
laying of either a 120mm or 81mm mortar using legacy U.S. standard mortars and ammunition. Completed development of a small, affordable imaging device capable of extracting object depth information along with a video stream of scenes. Completed development of an integrated, handheld device that combines a commercial off the shelf (COTS) Global Positioning System (GPS) receiver, a standard military Blue Force Tracker and Combat Survivor/Evader Locator radio for use during evasion of enemy forces or contingency operations. Completed development of a system that provides a self-healing, ad hoc air-to-ground mesh network for the transmission of real-time communications (voice and data). Completed development of a time-activated restraint and release system to temporarily restrain potential threat individuals for a predetermined period of time. Completed development of a low-signature, backlit wrist worn compass that allows the operator to easily view cardinal directions whether in a well-lit or dark environment. Completed development of a program of instruction and provided new equipment for special operations forces to enhance advanced marksmanship at ranges up to 1,800 meters. Completed development of a lightweight, compact system that combines motion-sensing alert with an IR illuminator to provide broader early-warning security for deployed teams.			
FY 2012 Plans: Develop a handheld intelligence, surveillance, target acquisition, reconnaissance system. Develop a single man-portable, collapsible-wing tactical micro unmanned aerial system with a secure mobile ad-hoc network data-link that is capable of being hand-launched from a man-portable canister. Develop an upper receiver group that provides significant suppression of both sound and flash from the current U.S. standard M4 carbine rifle. Develop a communication system that allows Tactical Operations Centers to send and receive large amounts of data to and from front-line operators in real time. Develop and deliver a lightweight, compact personal IR emitter capability for emplacement on an operator's helmet or outermost garment. Develop a spray-on antenna capability to provide increased communications for military tactical operators. Deliver a small, affordable imaging device capable of extracting object depth information along with a video stream of scenes. Deliver a small, affordable imaging device capable of extracting depth information and displaying it within a robotic platform's video display. 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 fully integrated helmet for law enforcement using advanced materials that are capable of withstanding NIJ Level IIIA body armor ballistic threats as well as bodily damage against blast, fragmentation, and blunt force trauma. Deliver a comprehensive reference source to summarize the performance characteristics of the available and proven breaching methods, tools, and tactics as they apply in a maritime environment. Deliver mobile mortar targeting systems with an integrated Fire Control System that provides rapid and accurate indirect fire solutions and translates that to auto-laying of either a 120mm (HMMMV) or 81mm (non-standard vehicle) using legacy U.S. standard mortars and ammunition.			
FY 2013 Plans: Deliver a handheld intelligence, surveillance, target acquisition, reconnaissance system. Deliver a single man-portable, collapsible-wing tactical micro unmanned aerial system with a secure mobile ad-hoc network data-link that is capable of being			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
hand-launched from a man-portable canister. Deliver an upper receiver group that provides significant suppression of both sound and flash from the current U.S. standard M4 carbine. Deliver a communication system that allows Tactical Operations Centers to send and receive large amounts of data to and from front-line operators in real time. Deliver a system that will alert the commander as to the status of his deployed sniper teams. Deliver an organic cell phone network that will provide voice and data services to at least 15 users simultaneously. Develop a specialized application for smart phones to provide a rapid mass alert tool that receives or reports the geo-rectified data (pictures/text) of incidents for U.S. Border Patrol agents. Deliver a spray-on antenna capability to provide increased communications for military tactical operators.			
Title: TRAINING TECHNOLOGY DEVELOPMENT ***FY 2011 Accomplishments:*** Developed a training package that included instructor-led training and supporting publications for the squad leader/observer and the squad to access Close Air Support (CAS). Developed post-blast training in a distributed-learning format that enhanced the ability of Explosive Ordnance Disposal (EOD) personnel to investigate and characterize the aftermath of explosive-related incidents in a combat zone. Analyzed mobile learning architectures and Web 2.0 technologies and developed job aids, content resources, and training courses for use within the military. Developed an advanced distributed learning training program for civilian and military law enforcement personnel on the topic of Advanced Improvised Explosive Device (IED) Awareness. ***FY 2012 Plans:*** Design and develop a weapon training aid to improve trigger control. Conduct an assessment study of existing homemade explosives (HME) training courses. Develop best practices for the military community on the implementation of the Shareable Content Object Reference Model. Design and develop training on the topic of counter tunnel investigations. ***FY 2013 Plans:*** Design and develop a training package for site exploitation in Afghanistan. Design and develop training and resources for the Raven small Unmanned Arial System (sUAS). Develop a program of instruction for conducting unconventional warfare initiatives in hostile environments. Develop a simulated training environment for embassy security. Design and develop a program of instruction for advanced undercover operations training.	5.877	4.850	5.017
Accomplishments/Planned Programs Subtotals	90.211	74.586	77.144

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

F. Performance Metrics

N/A

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*							
COST ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	6.585	6.571	-	-	-	-	-	-	-	Continuing	Continuing
P208: *Joint Interoperability*	2.407	1.884	-	-	-	-	-	-	-	Continuing	Continuing
P209: *Math Program*	-	3.187	-	-	-	-	-	-	-	Continuing	Continuing
P211: *Joint Interoperability Technology Development*	-	1.500	-	-	-	-	-	-	-	Continuing	Continuing
P202: *Joint Advanced Concepts*	2.212	-	-	-	-	-	-	-	-	Continuing	Continuing
P203: *Joint Electronic Warfare*	1.966	-	-	-	-	-	-	-	-	Continuing	Continuing

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.

Joint Interoperability has additional efforts to develop advanced mathematics techniques to manage large volumes of sensor data to solve DoD Battlefield challenges, to review new interoperability technologies, 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 2013 Office of Secretary Of Defense					DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*			R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*		
B. Program Change Summary ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	6.808	7.903	3.859	-	3.859
Current President's Budget	6.585	6.571	-	-	-
Total Adjustments	-0.223	-1.332	-3.859	-	-3.859
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-1.100			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.163	-0.187			
• Other Program Adjustments	-0.002	-	-3.859	-	-3.859
• FFRDC	-0.023	-0.045	-	-	-
• Economic Assumptions	-0.035	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P208: *Joint Interoperability*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P208: *Joint Interoperability*	2.407	1.884	-	-	-	-	-	-	-	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 Command, Control, and Communications (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 versus multiple times for weapons systems that are used by Services in the battlespace.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Joint Interoperability	2.407	1.884	-
Description: • Identify Friend or Foe (IFF) Mode Five (Mode 5) Technology Synchronization. • IFF M5 North Atlantic Treaty Organization (NATO) Interoperability and technology export. • Joint Personnel Recovery – Demand Assigned Multiple Access-Compatible (DAMA-C) lead with Defense Information Systems Agency (DISA), Services, and Joint Staff; Interoperability of personnel recovery equipment. • Sensor Signatures Oversight. • Interoperability Commission – U.S. Chair for Combat Identification (CID) bilateral with United Kingdom (UK). • Digital Joint Close Air Support – Lead for the Office of the Under Secretary of Defense for Acquisition, Technology & Logistics (OUSD(AT&L)) – interoperability technology. • Command, Control, Computers, and Communications (C4)/Cyber and Battlespace Awareness (BA) Funtional Capabilities Boards 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 (for example, Base Protection and Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR)).			
FY 2011 Accomplishments: • Worked on IFF Mode 5/ Mode S Technology Synchronization.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P208: *Joint Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
- Mode 5 Joint Operational Test Approach (JOTA) document completed and signed in 2Q FY 2011. - JOTA one system of systems interoperability test planned for 4Q FY 2011 as part of Navy Initial Operational Test and Evaluation (IOT&E). • Established a DoD-wide Mode S Frequency Management Working Group to coordinate DoD Mode S interrogation requirements, technical approaches, and operational use while ensuring minimal impact to civil systems. Approach includes close coordination with DoD Policy Board on Federal Aviation, Federal Aviation Administration (FAA), and National Telecommunications & Information Administration. • Developed two-stage approach for implementation of Mode 5 Level two capabilities, leveraging FAA mandate for use of Automatic Dependent Surveillance - Broadcast (ADS-B). NATO • Supported Capability Panel two (Navigation/Identification) activities to advance interoperability across NATO partner nation capabilities. • Coordinated development of US release strategy for IFF Mode 5 articles; US strategy provided to NATO to serve as NATO's initial baseline strategy for Mode 5. US/UK Interoperability Commission • Served as U.S. chair for CID team, examined options to more closely align U.S./UK IFF Mode 5 fielding schedules to support interoperability objectives. DAMA-C • DAMA-C Ultra High Frequency Satellite Communications (UHF SATCOM) draft waveform specification was completed in 3Q FY 2011. Capability Development Framework (CDF) • Performed CDF interoperability assessments for critical capability areas (for example, C4ISR and Electronic Warfare (EW). • Applied CDF process to provide an assessment of interoperability for use by DoD and multi-agency and coalition partners. Interoperability Senior Roundtable (ISRT) • Chaired the ISRT with a focus on reducing Program Management burden, while enabling interoperability within the Department's processes. • Reduced Net Ready Key Performance Parameter policy by 75 percent. Digital Joint Close Air Support (CAS)			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P208: *Joint Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
• Lead for AT&L - interoperability technology. • Provided oversight and steering for design, development, test and assessment of digitally-aided close air support (DACAS) engineering changes to service-specific tactical air controller (TAC) ground systems that enable seamless, integrated digital communication with multi-Service and multi-national manned aircraft which enables improved timeliness, improves accuracy, improves communication, reduces fratricide, and reduces fuel expenditure. • Initiated development of seven joint close air support engineering change proposals (ECPs) that provide enhanced joint and multi-national interoperable capability and overall increase in mission effectiveness at no expected additional outlay of programmatic funding. ECP 5 - Common Platform/System Mission Data Loading. ECP 6 - Joint Tactical Air Strike Request. ECP 7 - Forward Air Controller - Airborne (FAC (A)) Functionality. ECP 8 - Unmanned Aerial Systems (UAS) Integration as a Strike Platform. ECP 9 - Network Enabled Weapons (NEW) - Small Diameter Bomb (SDB) II Integration. ECP 10 - Multiple Targets in a Single CAS 9-Line. ECP 11 - Beyond Line of Sight (BLOS) CAS Situational Awareness (SA) Update/Integration of multiple digital communication methods for CAS. • Steered the development and fielding of the Joint Interoperability Test Center (JITC) DACAS variable message format test tool. This test tool will enable joint weapon system designers and test and evaluation community to develop and field integrated and interoperable capability. It will also ensure the capability remains interoperable when system is deployed and applied during warfighting missions. Signature Support Program (SSP) • Steered the SSP to increased overall weapon system capability of approximately 190 signature dependent acquisition programs through the organization, processes, and effectively applying limited program resources. • Established a signature collection schedule that enables all programs with signature collection requirements to leverage already planned signature collection events. • Identified list of Service, program, and private contractor existing signature databases that the DoD acquisition community can harvest to meet signature-dependent program development and test and evaluation requirements. • Directed and provided oversight for development of a web-based signature data sharing tool intended to provide access to all identified signature databases. This database is intended to enable program managers, test and evaluation personnel, and warfighters to access any available signatures to meet acquisition program, test and evaluation, and operational requirements without expenditure of funding to develop unique set of data. Joint Personnel Recovery (JPR)			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P208: *Joint Interoperability*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
• Provided innovative leadership to the JPR mission by initiating development of six ECPs to integrate Service specific and non-interoperable Personnel Recovery (PR) systems that provide increased capability to the warfighter operating in harms' way and support personnel operating in the field (soldiers, reporters, ambassadors, contractors, etc.). This capability is expected to being integration into systems during FY 2012 and fielding in FY 2013. • Provided leadership and oversight to development of operational context that included development and application of joint mission threads and system technical functional descriptions to steer and focus technical interoperable solutions in the Joint Close Air Support, PR, Counter Improvised Explosive Devices, Global Force Management, EW and Electronic Attack, Joint Fires, Humanitarian Assistance and Disaster Relief, and Computer Network Defense, Computer Network Attack, and Computer Network Exploitation. ***FY 2012 Plans:*** • IFF Mode 5 Technology Synchronization. • IFF Mode 5 NATO Interoperability and technology export. • JPR – DAMA-C lead with DISA, Services, and Joint Staff to improve Interoperability of PR equipment. • Sensor Signatures Oversight. • Interoperability Commission – U.S. Chair for CID bilateral with UK. • Digital Joint CAS – Lead for AT&L – interoperability technology. • Revised policies and procedures used to ensure net-centric joint interoperability. • Model Driven Architecture and Open Architecture exploitation in DoD. • Oversight of net-enabled Interoperability technologies. • Led technology development for an All Domain Tactical Picture. • Performed CDF Interoperability Assessments for critical capability areas (for example: Base Protection and C4ISR). • Enhance the interface of Joint Capabilities Integration and Development System (requirements) with early stage system engineering. • Discover, Analyze and document best practices for development planning and system of systems engineering. • Analyze and document interdependencies between DoD systems and mission areas. ***FY 2013 Plans:*** N/A			
Accomplishments/Planned Programs Subtotals	2.407	1.884	-

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P208: *Joint Interoperability*

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Not applicable for this item.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P209: *Math Program*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P209: *Math Program*	-	3.187	-	-	-	-	-	-	-	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 2011	FY 2012	FY 2013
Title: Math Program	-	3.187	-
FY 2012 Plans: Contract awards for this effort are expected in FY 2012. Efforts selected to continue in the FY 2013 Option Year will be based on their performance and relevance to military needs based on their demonstrations. Prior Accomplishments: Not Applicable - Contract award for this effort is expected in FY 2012. Accomplishments will be demonstrated at the end of the initial phase of the program in the first half of FY 2013.			
Accomplishments/Planned Programs Subtotals	-	3.187	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Successful demonstration using Bluegrass data no later than the first half of FY 2013 of either 1) Creating the elements of a common tactical picture in the low/slow air and ground domain, or 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 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P211: *Joint Interoperability Technology Development*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P211: *Joint Interoperability Technology Development*	-	1.500	-	-	-	-	-	-	-	Continuing	Continuing

Note

Funds re-aligned for higher priorities.

A. Mission Description and Budget Item Justification

Based on recent Assistant Secretary of Defense (Research and Engineering) 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 2011	FY 2012	FY 2013
Title: Joint Interoperabiltiy Technology Development	-	1.500	-
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	-	1.500	-

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 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P202: *Joint Advanced Concepts*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P202: *Joint Advanced Concepts*	2.212	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

Defense Technical Information Center (DTIC) issue paper expected.

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 United States versus non-United States 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 Program Element 0604875D8Z, Joint Systems Architecture Development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Joint Advanced Concepts	2.212	-	-
FY 2011 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. The effort 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 Command, Services and Agencies. In addition, provided 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 development of Guidance for Development of the Force. Represented Acquisition & Technology interests in requirements for future acquisition systems. Developed and updated capability roadmaps to inform decision makers for portfolio investment decisions and DoD Requirements.			
FY 2012 Plans: N/A			
Accomplishments/Planned Programs Subtotals	2.212	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P202: *Joint Advanced Concepts*

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 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P203: *Joint Electronic Warfare*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P203: *Joint Electronic Warfare*	1.966	-	-	-	-	-	-	-	-	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, Netted sensors 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 2011	FY 2012	FY 2013
Title: Joint Electronic Warfare	1.966	-	-
FY 2011 Accomplishments: • Developed 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. • Expanded State of EW baseline capabilities reference materials and worked on Strategy and Roadmap development. • Developed technical products and databases to allow comprehensive campaign analysis. • Developed EW Report to Congress and produced authoritative, EW specific budget summaries and databases. • Created mechanism to auto-populate and auto-update improving data quality and timeliness for shared information awareness. • Advanced Service and COCOM Mechanisms for EW Planning, Requirements Definition, Testing and Training. • Broadened efforts to develop an authoritative on-stop library of EW Capabilities. • Engaged with Director, Operational Test and Evaluation and Test Resource Management Center on the rate of test limitation growth in EW testing and investigated options for technology solutions. • Participated with Air Combat Command initiative to advance non-kinetic technologies and to re-introudce live EW training into RED FLAG exercises. • Led implementation FY 2011 Technology Task recommendations.			
Accomplishments/Planned Programs Subtotals	1.966	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603200D8Z: *Joint Advanced Concepts*	PROJECT P203: *Joint Electronic Warfare*

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Not applicable for this item.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	21.731	19.651	20.032	-	20.032	19.965	20.971	20.631	21.006	Continuing	Continuing
P225: *Joint DOD/DOE Munitions*	21.731	19.651	20.032	-	20.032	19.965	20.971	20.631	21.006	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 conventional 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 (for example: 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 eight 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 (HPCMP) Requirements Analysis Report, the DOE computer codes are used for over 70 percent of all (classified and unclassified) structural mechanics simulations and for virtually all of the classified calculations run by DoD on HPCMP platforms. 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 five to one 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 GBU 129 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 to mitigate these injuries.
– 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 initiability 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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	22.700	20.372	20.681	-	20.681
Current President's Budget	21.731	19.651	20.032	-	20.032
Total Adjustments	-0.969	-0.721	-0.649	-	-0.649
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.564	-0.585			
• Other Program Adjustments	-0.207	-	-0.649	-	-0.649
• Economic Assumptions	-0.115	-	-	-	-
• FFRDC	-0.083	-0.136	-	-	-

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Computational Mechanics and Material Modeling	7.803	6.613	7.331
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 the complex phenomena across significant length (meso to continuum) and time (microsecond to minute) scales. The tools will provide coupled, multi-physics and chemistry modeling capabilities 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			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
includes an extensive experimental component consisting of phenomenological or “discovery” experiments that drive model development; calibration experiments to compliment models; and experiments for model and code validation. The specific projects in computational mechanics and material modeling are: – CTH, SIERRA shock physics code & model development, and experiments: impact initiation of high explosives; composite material modeling; mesoscale experiments, model development, & analysis; coupled physics code development; and models for localization and failure. – Arbitrary Lagrangian-Eulerian (ALE3D) code & model development. – Advanced Multi-Domain Coupling (AMC) (formerly DUNE) development. – Composite case technology and modeling. – Near-field lethality modeling. – Dynamic properties of materials. – Energetic materials and polymers under dynamic and thermal loading. – Fragment impact and response experiments. ***FY 2011 Accomplishments:*** – Coupled yield damage-surface with void effects and demonstrated with plasticity code in 3D. – Implemented composite structural plate/shell model with cohesive zone element. – Developed dual domain material point method for use in CartaBlanca particle code. – Coupled viscoplastic self-consistent plasticity model with ALE3D using adaptive sampling techniques. – Completed mechanical characterization of rocket insulating material. – Completed Taylor impact testing of explosive PBX N9. – Released new version of ViscoSCRAM. – Applied ViscoSCRAM to high rate impact and penetration problems. – Completed study of rubbery damage in high performance rocket propellants (HPP). – Completed small-scale gap threshold experiments of low-density and thermally cycled PBX 9501. – Completed ball impact experiments to characterize debris cloud from inert rocket motor surrogates. – Released ALE3D version 4.14, which includes several new material models, enhancements to autocontact, and improved usability. – Implemented 2D fluid-solid interactions in Adaptive Multi-domain Coupling. – Completed cylinder testing to determine factors governing compression strength of composites. – CTH versions 10.0 and 10.1 released. – Conducted shockless dynamic compression of HE at low temperature.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Released beta version of thermal battery thermal model. ***FY 2012 Plans:*** – Develop an advanced shell structural element for composite models. – Further develop the two-component shear localization model to address fragmentation problems. – Apply CartaBlanca to 3D fracture and fragmentation problems. – Complete next generation high explosive mechanical models. – Couple ViscoSCRAM micro-damage to Finite Element Model macro-damage. – Complete initial study of shock shear initiation of explosives. – Develop a coupled initiation-constitutive model for high explosives (HE). – Complete ball impact test series on covered PBXN-9 charges. – Complete preliminary tests to assess utility of extended Floret test to determine explosive initiation and performance data. – Next release of ALE3D with improvements in: 2D and 3D detonation shock dynamics (DSD); element erosion; smooth particle hydrodynamics (SPH); material property database; embedded grids; and finite void insertion. – Complete validation and verification of AMC 2D hydrodynamic-structure coupling and 2D hydrodynamic-light rigid body coupling. – Complete study of using nanoparticles to enhance strength of composite materials. – Complete thermal sensitivity study of carbon fiber/epoxy composite – Release CTH versions 10.2 and 10.3 with: physics-based fracture; material interface improvements; and material property consolidation. – Demonstrate more accurate coupling of SIERRA and CTH for analysis of shock-loaded structures. – Demonstrate embedded beam/spar elements for modeling composite structures such as reinforced concrete. – Implement new statistical models for shock analysis of reactive composite energetic materials. – Complete shock characterization of fiber composite materials. – Compare different experimental techniques for temperature measurement during dynamic deformation of materials. – Complete shockless dynamic compression of heated and cooled explosive materials. ***FY 2013 Plans:*** – 2D and 3D simulation using Tonks model and experimentally determine microstructure. – Incorporate interface particles into CartaBlanca. – Develop couple yield-damage surface model with shock effects. – Complete characterization of HTPB binder for rocket propellant. – Implement next generation HE mechanical model into ABAQUS and EPIC codes. – Develop polymer constitutive model with improved damage physics. – Complete tests to determine influence of temperature on impact response of pristine and damage energetic materials. – Next release of ALE3D with improvements in: implicit shells; embedded grids; material database; coupled element erosion with SPH; and DSD with corner turning.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Improved AMC with adaptive mesh refinement and implementation of 2D fluid-structure coupling into ALE3D. – Complete experimental and computational study to determine optimum performance of metal/composite couplers. – Generalize and extend SIERRA XFEM capabilities to model pervasive failure mechanisms. – Improve large deformation modeling applied to progressive collapse of structures. – Release CTH versions 11.0 and 11.1 with: energy/momentum discards; new tabular equation of state format; adaptive mesh refinement compatible with manual rezone; and a model for non-ideal explosive behavior. – Compete line VISAR measurements of HE to support heterogeneous material modeling and statistical analysis.			
Title: Energetic Materials	4.783	4.482	4.479
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. 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.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
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 – 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 2011 Accomplishments:*** – Synthesized new oxidizer materials, including those based on trinitromethyl substituents on heterocyclic materials. – Scaled-up synthesis of high-nitrogen burn-rate modifiers TAGDNAT, TAGN4BIM, and TAGATF and sent products to DoD labs for evaluation. – Conducted next series of thermal cook-off experiments in the proton radiography facility. – Constructed and evaluated dynamic X-ray diagnostic for thermal kinetic studies of energetic materials. – Scaled up synthesis of LLM-172 and -191 explosives. – Demonstrated new synthesis route for insensitive HE LLM-105 at the 2 kg scale. – Characterized phase diagrams for three binary melt-cast explosives. – Characterized performance of low-melting point explosives using newly developed small-scale rate stick test. – Completed sound speed measurements on water and strong acid mixtures at highest pressures and temperatures ever achieved for such systems in order to calibrate Cheetah equation of state (EOS) predictions. – Completed first ever EOS measurement of boron-containing product to facilitate development of Cheetah boron chemistry predictions. – Completed study of relationship between porosity and deflagration rates in HMX-based explosives.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Completed shock initiation testing and developed ignition and growth model parameters for PBXN-112 and AFX-757. – Determined that DNTF exhibits the smallest critical thickness of any secondary explosive. – Conducted a series of experiments on RDX with the variable volume version of the Sandia Instrumented Thermal Ignition (SITI) apparatus and measured gas evolution prior to ignition in slow cook-off. – Demonstrated that quantum chemistry calculations do not capture key features of low- and moderate-temperature reaction pathways for heterogeneous energetic materials. – Demonstrated morphologically varied lead azide by controlling microfluidic reactor parameters and reaction precursor composition.			
FY 2012 Plans: – Synthesize insensitive energetic materials NNQAT and NNQBT. – Implement full thermal kinetic model for HMX into ALE3D. – Establish relationships between internal pressure and convective and conductive burn rates in PBX 9501. – Lab-scale production, dielectric property characterization, and energetic performance testing of microwave-sensitive energetic materials. – Develop preliminary model for microwave sensitivity of filled IMX-101. – Construct CTH model of a hemispherical microwave-sensitized explosive system using a kinetics-based burn model and compare to a preliminary onionskin experiment. – Synthesize new oxadiazole-based explosives using tricyclic nitrofurazan derivatives. – Calibrate and validate new precision rate-stick design to extract reliable equation of state data. – Implement, calibrate, and test ionic equilibrium option in Cheetah for CHNO and halogenated explosives. – Expand liquids and solids EOS library in Cheetah for more accurate modeling of metal-loaded explosives. – High pressure and temperature EOS data for acid mixtures, oxides, and silicon compounds to support further development of Cheetah. – Implement multiphase convective burn model spiral two and HERMES spiral two model for impact response of energetic materials in latest release of ALE3D. – Complete shock initiation measurements of PBXN-112 and AFX-757 at different pressures to refine ignition and growth model parameters. – Deposit a large area of thin-film explosive with good uniformity. – Complete multi-point detonation transfer in the thin explosive films. – Develop cook-off pre-ignition models that incorporate pressure dependence and gas generation and validate the models for TATB explosives and AP propellants. – Determine the effect of confinement on ignition in fast cook-off.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Demonstrate use of Simultaneous Thermogravimetric Modulated Beam Mass Spectrometery and Chemical Imaging Precision Mass Analysis to ignition and initiation processes of energetic materials at low and moderate temperatures. – Prepare and characterize modified AP for IM propellants. – Complete preliminary microfluidic nitration reactor design. ***FY 2013 Plans:*** – Complete synthesis and characterization of insensitive energetic materials for booster applications. – Design deflagration to detonation transition experiments for proton radiography. – Compare simulations with pop plot behavior and onionskin experiments for microwave-sensitized explosives. – Synthesize new tricyclic and quadricyclic oxadiazoles for insensitive and high-power high explosives. – Design an efficient prototype test for determining failure diameters. – Release Cheetah version seven, which will provide enhanced accuracy for a wide range of energetic formulations, including those containing fluorine, chlorine, bromine, boron, silicon, and tungsten. – Develop technique to characterize high-pressure deflagration. – Complete mesoscale simulations of energetic materials under stress and pressure/confinement. – Scale thin-film deposition of explosives to gram scale. – Develop and validate models for thermally induced damage in TATB explosives and AP propellants. – Complete thermal decomposition study of propellant binder PNO with and without candidate stabilizers. – Determine low and moderate temperature reaction networks for pyrotechnic actuator materials TiHx and KClO4. – Complete initial microfluidic nitration reactor experiments.			
Title: Initiators, Fuzes, and Sensors	3.682	3.463	3.351
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 power systems, 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			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
reliable and provide high-fidelity discrimination. Two projects in this focus area are developing technologies to achieve this level of performance in compact packages. The specific projects in the initiators, fuzes, and sensors technical focus area are: – Firing systems technology: FireMod firing set code model development and validation, 1.6 hazard classification detonator development, and 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. – New materials, fabrication technologies, and modeling and simulation tools for thermal batteries. – MESASAR synthetic aperture radar (SAR) sensors. – Vertical cavity surface emitting laser (VCSEL) sensors for proximity fuzing. ***FY 2011 Accomplishments:*** – Evaluated the use of an electric gun for wedge tests and collected pop plot data for the RSI-007 detonator. – Developed a 2D hydrocode model for a slapper detonator that uses confinement to assist propagation. – Established small-scale production facility for advance thermal batteries and executed a CRADA for technology transfer to an industrial partner. – Released beta version of standalone thermal battery thermal modeling capability. – Determined ignition behavior of wet-deposited thin-film energetic materials. – Validated thin-pulse initiation model based on shock-pore interactions. – Fabricated flyback transformers with improved magnetic performance using new ferrite materials. – Completed acceptance testing and highly accelerated life testing of advanced multi-mode chip modules for miniaturized synthetic aperture radar systems. – Built and tested prototype Ku-Band transmit/receive module for synthetic aperture radar active antenna array. – Demonstrated planar-integrated transmitter-receiver module for vertical cavity surface emitting laser. ***FY 2012 Plans:*** – Complete large-scale Schlieren diagnostic capability for initiation systems. – Complete study of detonation transfer across gaps. – Continue to collect and catalog Schlieren images of DoD detonators. – Measure RSI-007 detonator threshold parameters for electric gun-launched flyer plates. – Measure EDF-11 detonator threshold parameters and detonation velocity as a function of charge diameter. – Complete study of RSI-007 run-to-detonation distances.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Incorporate experimental data into reactive flow models for RSI-007 and EDF-11 detonators. – Final summary of novel heat source development and increased power capability for advanced thermal batteries. – Complete thermal battery electrochemical model for single cell battery. – Release thermal battery thermal modeling capability within SIERRA simulation suite of codes. – Develop thermal battery thermo-mechanical modeling for a single cell battery. – Measure ignition and growth in the thin-film energetic materials. – Evaluate deflagration to detonation (DDT) transition in polymer-bound thin-film explosives. – Complete performance testing as a function of morphology for HNS explosive. – Summarize EOS data for HNS based on density function theory molecular dynamics simulations and diamond anvil cell experiments. – Compare two processes for producing small particle size TATB. – Perform chip slapper initiation threshold testing of micronized TATB. – Develop and scale-up synthesis of tetragonal barium titanate nanoparticles. – Develop process for tape casting nanoparticle lead zirconate titanate into devices. – Complete simulations of different packaging methods to improve survivability of a single electronic component under harsh thermal and mechanical environments. – Complete a design for improved flux coupling in flyback transformers. – Build and test first prototype flyback transformer using new tape-cast materials. – Build and range-test a prototype Ku-Band active antenna array. – Mature technology and fabrication processes for low-temperature co-fired ceramic multi-chip modules for insertion into radar fuze systems. – Demonstrate Geiger mode detection operation of vertical cavity surface emitting laser detector arrays.			
FY 2013 Plans: – Complete explosively driven Particle Imaging Velocimetry measurements. – Demonstrate ALE3D model of DoD slapper detonator. – Complete optimization of 3D chip slapper shape optimization. – Extend James model to account for area effects in detonators. – Validate thermal battery thermo-mechanical model for single cell battery. – Evaluate deflagration to detonation transition in lead-free, thin-film explosives. – Complete survivability simulations of a simple electronic board subject to thermal and dynamic mechanical loading. – Build and test second prototype flyback transformer using new tape-cast materials. – Develop and range-test a prototype Ka-Band active antenna array.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Develop a miniature transmit/receive module using low-temperature co-fired ceramics and integrate into Ku-Band active antenna array. – Improve the power density of 980 nm vertical cavity surface laser emitter arrays.			
Title: Warhead and Penetration Technology	4.134	3.871	3.758
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 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.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: – Completed initial study of HE-driven incipient spall in 1018 steel, Cu, and Ta – Completed shear localization studies of high-purity Fe as a function of stress state. – Completed an analysis of oblique shock using jump relationships to better resolve wave structure in both reflection and Mach reflection regimes. – Completed systematic code verification of the current multiphase blast explosive model in ALE3D. – Completed discovery experiments to test new diagnostics that can provide further insight into the key physics of multiphase explosive detonation. – Summarized all previous erosive initiator experiments and archived and stored all related data. – Performed thermal characterization of PAX-21 for erosive initiator applications. – Made operational the freeze-casting apparatus for controlled effects warhead materials (CEWM). – Completed simulations to determine pressure profile obtained with laser shock experiments to be used with CEWM. – Produced and characterized first batch of CEWM having dilute concentrations of low-melting phase. – Completed computational study to assess the effects of different physical parameters on the dynamic mechanical behavior of sand. – Completed analysis of the effects of fracture and fluid interaction on the dynamic behavior of sand. – Implemented a version of state-based peridynamics in the KRAKEN code for fracture and fragmentation. – Made several usability improvements to KRAKEN including: ability to read CUBIT output files, z-data file for output of fragmentation data, and a graphical user interface for input and output. – Implemented markers kinematics in CTH. – Completed high speed pressure-shear experiments on granular materials. – Developed a torsional Kolsky bar for dynamic friction experiments. – Completed dynamic characterization of advanced, high-g accelerometers.			
FY 2012 Plans: – Complete quantification of oblique HE-driven shock hardening and damage in Cu, Ta, and Cu one percent Pb. – Complete study of shear localization in HF-1 steel and 6061 aluminum as a function of processing history, strain rate, and temperature. – Characterize microstructural changes due to shock obliquity and shear through 3D characterization of damage in Cu and Ta. – Improve analysis of oblique shock by adding the TEPLA plasticity model to better determine stress deviator response and adding a bifurcation analysis of metal stability in the shock wake. – Develop a multiphase explosive burn model guided by mesoscale simulations and experiments. – For erosive initiator technology: – Perform granular shaped-charge scaling study.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Validate insult coupling in simulations. – Validate thermal model for PAX-21. – Complete mesoscale modeling of granular jet impact. – Complete tube shot validations. – Perform reaction volume and target shape effect correlations. – Perform quasi-static and laser-driven shock experiments on first batch of CEWM and characterize materials aftershock experiments. – Produce and characterize first batch of freeze-cast alumina/epoxy and W/Bi CEWM. – Produce and characterize first batch of W-Fe-Ni alloy powders mixed with dilute amounts of low melting Bi-Sn powders for CEWM. – Complete simulations of Kolsky bar experiments with sand. – Complete first enhanced sand constitutive models for implementation in ALE3D. – Transition the standalone KRAKEN code to one of the larger DOE codes (ALE3D, CTH, or SIERRA). – Implement markers with deviatoric stress capability in CTH. – Perform dynamic friction experiments. – Perform perforation experiments through high-strength concrete. – Provide improved high-strength concrete model in UMAT format. ***FY 2013 Plans:*** – Identify key mechanisms in particle-target interaction in multiphase blast explosives. – Perform code verification and validation for multiphase blast explosives model. – Complete quasi-static and laser-driven shock experiments on controlled microstructure materials made from alloy mixture and from W/Bi. – Apply enhanced sand model in impact simulations. – Perform KRAKEN simulations of spall, Taylor impact, cylinder expansion. – Initial release of KRAKEN fragmentation analysis system. – Implement first part of mixture theory in CTH. – Complete dynamic friction study.			
Title: Munitions Lifecycle Technologies	1.329	1.222	1.113
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. 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			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
to quantitatively predict materials aging processes and ultimately improve the long-term reliability of weapons systems, sub-assemblies, and/or components. These objectives are 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 2011 Accomplishments:*** – Demonstrated new science-based health assessment tool for single failure mode modeling using SNL long-term aging data and solder joint failure model for COTS electronics. – Developed population reliability methodology and Pareto front approach for the design of experiments to assess weapon system health. – Developed metric for determining adhesive degradation by water. – Completed Sn whisker validation experiments for lead-free solder dynamic recrystallization model. – Completed characterization and accelerated testing of Sn whisker mitigation techniques for lead-free solders. – Demonstrated collection of in-situ environmental data using engineered aging structures (EAS) integrated into a weapon system. – Validated long-term life prediction models against seven years of field storage data for COTS electronics. – Developed life prediction models for new COTS electronic materials and components. ***FY 2012 Plans:*** – Develop methodology to identify best resource allocation using Pareto front approach to design of experiments for weapon system health assessment. – Develop methodology for optimizing weapon system usage pattern based on health assessment. – Complete evaluation of coated and uncoated fused Sn films as mitigators for whisker formation in lead-free solders. – Develop method to characterize adhesive degradation to due temperature and humidity changes. ***FY 2013 Plans:*** – Couple environmental data to weapon system reliability in health assessment.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Determine tin layer thickness, barrier metal fusing temperature, and cooling rate to best mitigate Sn whiskers in lead-free solders subjected to highly accelerated stress testing and temperature cycling. – Validate predictions of adhesive to smooth stainless steel degradation in humid environments. – Publish best practices for trusted COTS process that include avoidance and detection of counterfeit and adversarial threats.			
Accomplishments/Planned Programs Subtotals	21.731	19.651	20.032

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

1) Transitions of technologies developed by the Program are tracked and documented. In FY 2010 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	22.716	7.112	6.983	-	6.983	7.634	8.332	8.599	8.756	Continuing	Continuing
P619: *Joint Electronic Advanced Technology*	22.716	7.112	6.983	-	6.983	7.634	8.332	8.599	8.756	Continuing	Continuing

A. Mission Description and Budget Item Justification

In Overseas Contingency Operations (OCO), the United States (US) 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 US 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 US 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 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 2013 Office of Secretary Of Defense					DATE: February 2012
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	8.386	7.287	7.179	-	7.179
Current President's Budget	22.716	7.112	6.983	-	6.983
Total Adjustments	14.330	-0.175	-0.196	-	-0.196
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	14.500	-			
• SBIR/STTR Transfer	-0.096	-0.126			
• Economic Assumptions	-0.043	-	-	-	-
• FFRDC	-0.029	-0.049	-	-	-
• Other Program Adjustments	-0.002	-	-0.196	-	-0.196

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P619: *Joint Electronic Advanced Technology*	22.716	7.112	6.983	-	6.983	7.634	8.332	8.599	8.756	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 (US) 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 US military defensive systems. These asymmetries highlight the need to rapidly evolve alternative Electronic Warfare (EW), Information Operations and Counter Terrorism capabilities suitable for neutralizing such threats. This program 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 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 is used to evaluate the feasibility and military utility of resultant low cost, near term capabilities. FY 2013 efforts will investigate, integrate, test and demonstrate elements of the following technologies:

1. Integrated Situational Awareness and Countermeasures

Department of Defense (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. 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 situational 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 Equipment (RASE) experiments bringing sensors and shooters together in a collaborative learning environment using live fire with a variety of weapons and environments.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

2. Low Cost/Near Term Counter Asymmetric Systems
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.

Tasks leading to a rapid technology transition to be completed in FY 2013:

Begin efforts to evaluate the signatures of air platforms that are threatened by new classes of surface-to-air threats. Efforts will include using new instrumentation in conjunction with tests that are planned for other purposes (tag-along testing) to measure relevant signatures of platforms in order to develop defensive strategies. Additionally, FY 2013 efforts include investigation of rapidly deployable technologies that could be used to help counter emerging threats.

3. Disruptive Technology Defeat and Utilization
This effort involves emerging and disruptive technologies analysis and 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. Emphasis will be on demonstrating an end-to-end kill chain and techniques which minimize or eliminate collateral damage. Starting in FY 2011 the efforts of this mostly-government team included 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 US Central Command (CENTCOM), US Special Operations Command (SOCOM), Assistant Secretary of Defense, Research & Engineering (ASD (R&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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Integrated Situational Awareness and Countermeasures	11.623	3.337	3.850
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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 2011 Accomplishments:*** Efforts included 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 were initiated. Follow-on testing continued under RASE. Deliverables include a report on feasibility of combined Infrared Countermeasures/Hostile Fire Indicator (IRCM/HFI)/Degraded Visual Environment (DVE) functionality. ***FY 2012 Plans:*** Include efforts to demonstrate the feasibility of a hostile fire detection and non-lethal countermeasures capability using advanced threat 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. ***FY 2013 Plans:*** Complete efforts to demonstrate the feasibility of a hostile fire detection and non-lethal countermeasures capability using advanced threat detectors and magnetically actuated optics. Demonstrate capability to use magnetically actuated mirror technology to provide situational awareness in degraded visual environments by creating a working prototype that can be evaluated using ground based testing. Begin efforts to integrate free space laser communications capability based upon magnetically actuated optics by creating a working prototype that can be evaluated in laboratory testing and study/begin to demonstrate feasibility of combining design elements with IRCM, Hostile Fire Detection/Countermeasures and obstacle avoidance systems into an integrated package. Also, begin efforts to evaluate integrating offboard information into an integrated EW Battle Management construct that incorporates helicopter and tactical jet derived information to provide integrated Infra Red (IR) and RF countermeasures in a complex spectral environment containing threats operating in multiple areas of the electromagnetic spectrum threat airspace. 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 threat countermeasures, miniature high reliability lasers, magnetically steered high reliability pointer-trackers, higher powered and higher duty cycle lasers.			
Title: Low Cost/Near Term Counter Asymmetric Systems	6.677	0.500	1.225

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

Description: Low cost, near term technologies solutions to asymmetric EW threats.

FY 2011 Accomplishments:

Distributed Ground Based Threat Detection System (DGTDS) focused on finalizing all system documents and hardware drawing to allow for a smooth transition of the technology to the customer. 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 was completed to enable seamless technology transfer to limited production/ industry.

Aircraft Missile Protection System (AMPS) completed 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 December 2010; performed end-to-end live fire missile firing test at China Lake to demonstrate system performance in December 2010; closed out project with final delivery of all system design documentation, hardware, and software code in February 2011. AMPS was also integrated with the Defensive System Digital Recorder (DSDR) system and demonstrated the ability to accept ground sensor cueing from the Countermeasure Expendable with Replaceable Block Elements for Reactive Unmanned Systems (CERBERUS) to pass Cursor on Target (CoT) information to a surrogate air vehicle and multiple man portable targeting systems simultaneously. AMPS design, documentation, hardware and software is available for near term integration/implementation for contingency operations.

Electronic Warfare System Effectiveness Analysis (EWSEA) conducted characterization of the EW techniques available for EW systems against given threats. Completed detailed analysis with Navy Tactical Aircraft, Anti-Ship Missile Defense and standoff jammers. Effectiveness metrics for Analytic Agenda scenarios were captured from programs of record, ascertaining how effective our EW inventory and techniques perform against given threats.

Special Material Aero Urban Decoy (SMAUD) conducted effectiveness flight testing for the updated decoy design for H-60 aircraft. Funding was provided to DoD components for test planning, test aircraft and vans, and range costs. Conducted modeling and simulation of the potential effectiveness of this decoy concept for the CV-22. Funding was provided to DoD Modeling and Simulation laboratories for analysis and transition. Briefings were provided at Advanced Threat Tactical Electronic Defense Symposiums, Military Sensing Symposiums, and Aircraft Survivability Symposiums.

Began 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:

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Refine a knowledge base of existing EW techniques and systems started in FY 2011. This capability will assist leadership in finding synergies between existing systems and developmental capabilities. This knowledge base will help realize efficiencies in development as well as identify opportunities to create rapid prototypes of capabilities to defeat advanced and asymmetric threats. Based upon the Office of the Secretary of Defense (OSD) Advanced Threat study, completed in FY 2010, JEAT will continue efforts to implement and demonstrate 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 evaluation as well as laboratory trials. Create and populate data into the countermeasures database available for broad joint service use. ***FY 2013 Plans:*** Maintain and improve the EW techniques knowledge base. Use the knowledge base to identify inter-service and cross domain opportunities for synergy in joint EW endeavors. Continue efforts to create countermeasures for advanced ManPADS threats including creation and laboratory evaluation of brass-board prototypes of countermeasure capabilities.			
Title: Disruptive Technology Defeat and Utilization	4.416	3.275	1.908
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. Emphasis will be on demonstrating an end-to-end kill chain and techniques which minimize or eliminate collateral damage. In 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, ASD(R&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 ASD(R&E). ***FY 2011 Accomplishments:***			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Efforts were developed in coordination with the defense research community and Defense Intelligence Agency (DIA) elements seeking ways to avoid technological surprise. Further efforts investigated novel means of detecting and locating signatures of terrorist activity, differentiating between terrorist and indigenous activities and providing timely, actionable intelligence that allows asymmetric disruption of terrorist kill chains. JEAT is working with the US SOCOM, Naval Special Operations Command, and other members of the Special Forces, Conventional Forces, and Intelligence Community in planning, executing, and reporting on Trident Spectre. This activity provided 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 ASD(R&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 provided expertise to Joint Integrated Air and Missile Defense Organization (JIAMDO) for a variety of US defense systems that were demonstrated and evaluated in August 2011 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 work with the US 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 ASD(R&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. This project will provide expertise to JIAMDO for a variety of US defense systems to be demonstrated and evaluated in the August 2012 timeframe and to demonstrate Combat Identification (CID) and the end-to-end kill chain of UAVs in the maritime environment. ***FY 2013 Plans:*** Continue efforts to evaluate special operations and intel community requirements/synergies and develop rapidly deployable capability. Trident Spectre will transition to a long term special operations/intel community sponsorship in FY 2013.			
Accomplishments/Planned Programs Subtotals	22.716	7.112	6.983

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	185.591	171.807	158.263	-	158.263	155.198	163.896	166.677	169.738	Continuing	Continuing
P648: *Joint Capability Technology Demonstration (JCTD)*	185.591	171.807	158.263	-	158.263	155.198	163.896	166.677	169.738	Continuing	Continuing

Note

In FY 2011 funding was transferred from the Joint Capability Technology Demonstration (JCTD) BA4 PE 0604648D8Z and Defense Aquisition Executive (DAE) Pilot program BA 5 PE 605648D8Z into the JCTD BA3 PE. The JCTD BA-4 PE and DAE BA-5 Pilot Program PEs ended.

Today's operations require even faster delivery of new capabilities. Therefore, the JCTD Program was revised 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: streamlined project approval and initiation; clear one-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 into operations. 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 of JCTDs 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, over 90 percent of completed JCTDs have successfully transitioned capabilities to warfighters. 70 percent 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 of Defense (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 74 JCTD/ACTD projects delivered capabilities used in Operation Iraqi Freedom, and 57 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. A recent example is the Persistent Ground Surveillance System (PGSS) JCTD, which quickly (several months) demonstrated and assessed aerostat and integrated sensor technologies to provide wide area surveillance for forward operating bases. Success has led to procurement of over 30 PGSS systems providing 24 hour protection to bases in Afghanistan.
- The program enables Coalition cooperative development by leveraging partner nation expertise and resources. More than one quarter 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 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, tunnel detection and characterization, and Arctic awareness.
- The program enables rapid response to new DoD 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: Metrics include: all JCTDs will have deliverables 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 receiving funding. 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 General Services Administration (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 POR, providing residual capabilities sustained by non-JCTD funds in direct support of operations, or commodity-type capabilities entered onto GSA schedule for procurement by Department users. 14 of 18 completions in FY 2011 successfully transitioned.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	206.917	187.707	199.262	-	199.262
Current President's Budget	185.591	171.807	158.263	-	158.263
Total Adjustments	-21.326	-15.900	-40.999	-	-40.999
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.856	-3.884			
• Baseline Adjustment	-	-	-40.999	-	-40.999
• Congressional Adjustments	-15.000	-11.000	-	-	-
• Economic Assumptions	-0.975	-	-	-	-
• FFRDC	-0.691	-1.016	-	-	-
• Other Program Adjustments	-0.804	-	-	-	-

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).

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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)*

Baseline Adjustment. ASD(R&E) baseline adjustments reflective of Department of Defense priorities and requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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)*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P648: *Joint Capability Technology Demonstration (JCTD)*	185.591	171.807	158.263	-	158.263	155.198	163.896	166.677	169.738	Continuing	Continuing

Note

In FY 2011 funding was transferred from the Joint Capability Technology Demonstration (JCTD) BA4 PE 0604648D8Z and Defense Aquisition Executive (DAE) Pilot program BA 5 PE 605648D8Z into the JCTD BA3 PE. The JCTD BA-4 PE and DAE BA-5 Pilot program PEs ended.

Today's operations require even faster delivery of new capabilities. Therefore, the JCTD Program was revised 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: streamlined project approval and initiation; clear one-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 into operations. 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 of JCTDs 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, over 90 perecent of completed JCTDs have successfully transitioned capabilities to warfighters. 70 percent 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 of Defense (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 74 JCTD/ACTD projects delivered capabilities used in Operation Iraqi Freedom, and 57 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. A recent example is the Persistent Ground Surveillance System (PGSS) JCTD, which quickly (several months) demonstrated and assessed aerostat and integrated sensor technologies to provide wide area surveillance for forward operating bases. Success has led to procurement of over 30 PGSS systems providing 24 hour protection to bases in Afghanistan.
- The program enables Coalition cooperative development by leveraging partner nation expertise and resources. More than one quarter 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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*

- 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, tunnel detection and characterization, and Arctic awareness.
- The program enables rapid response to new DoD 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: Metrics include: all JCTDs will have deliverables 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 receiving funding. 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 General Services Administration (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 POR, providing residual capabilities sustained by non-JCTD funds in direct support of operations, or commodity-type capabilities entered onto GSA schedule for procurement by Department users. 14 of 18 completions in FY 2011 successfully transitioned.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Adaptive Planning Pilot (APP)	1.900	-	-
Description: APP provides Combatant Commanders with needed dynamic and agile force planning capabilities as outlined in the Adaptive Planning Road Map II. APP provides global force management tools to Adaptive Planning and Execution users. It provides early capability to planners and force providers by providing services that were not present in the Global Command and Control System Family of Systems. APP's output is the ability of COCOMs, Joint Staff planners, and the military Services, to conduct streamlined operations with the Global Force Provider and with members of the Joint Planning and Execution Community. The primary metric is accurate and timely global force management during planning and execution. ***FY 2011 Accomplishments:*** Completed Logical Data Model of Adaptive Planning data elements. Completed Spiral Two technical demonstration. Completed web enabled exchange capability between Joint and Services' Force Sourcing Data Bases. Transitioned Adaptive Planning functionality and data models to Defense Information Systems Agency's (DISA) Forge.mil repository for use in future Adaptive Planning and Execution projects. Completed the JCTD.			
Title: Airborne Weapons Surveillance System (AWSS)	1.400	-	-
Description: 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. AWSS 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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
the detections of artillery fires at ranges of up to 20 kilometers; the location accuracy of hostile firing units; and the transmission time of hostile fires and hostile firing locations to coalition counter fire units, in efficient machine readable formats. Technical demonstrations will be conducted in Korea using Republic of Korea unmanned air vehicles. ***FY 2011 Accomplishments:*** Supported residual operations by Combined Forces Korea and minor improvements to the sensor technology. Completed the JCTD.			
Title: Collaborative On-line Reconnaissance Provider Operationally Responsive Attach Link (CORPORAL) ***Description:*** CORPORAL provides ground-based, deployed Marines and Soldiers with the capability to take full advantage of tactically relevant sensor data, command and control (C2), and electronic attack in near real time. The capabilities include Non-Traditional Intelligence Surveillance and Recognizance "on-demand" to the ground unit and beyond line-of-sight connectivity maximizing opportunity for collaboration or synchronization. CORPORAL decentralizes 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. CORPORAL provides a collaborative distributed data and information exchange framework based on existing and planned warfighters' communication waveforms. ***FY 2011 Accomplishments:*** Completed Technical Demonstrations 2 and 3, and the Military Utility Assessment. Transitioned CORPORAL residuals to PMA-234.	1.300	-	-
Title: Communications Air-Borne Layer Expansion (CABLE) ***Description:*** CABLE demonstrates 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. CABLE provides seamless interconnection of multiple air, maritime, and land network coverage areas supporting voice and data; cross-band and multi-routing-domain connectivity within and between coverage areas through internet protocol (IP) routing; the extension of command and control connectivity throughout the full range of operations; and enhanced network services for voice, video, and data communications over a common IP network. ***FY 2011 Accomplishments:*** Completed Operational User Evaluation and finalized technical documentation for transition partners. Supported transition of CABLE demonstrated technologies. Transferred final documentation and concept of operations to COCOM sponsors and Service	1.200	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
command elements. Completed transition to the Services. Supported Joint Aerial Layer Networking Analysis of Alternatives. Completed the JCTD.			
Title: Common Ground (CG) ***Description:*** CG provides the capability to interoperate on common ground geospatial data 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 standards and guidance, as well as international standards adopted by the U.S. to address information exchange. CG enables the sharing of digital orders and plans across C2 systems and a reduction of errors and misunderstanding among distributed systems. All CG capabilities have been incorporated as commercial software under a DoD Enterprise License. ***FY 2011 Accomplishments:*** Conducted final operational assessment. Initiated Doctrine, Operations, Training, Materials, Leadership and education, Personnel, and Facilities (DOTMLPF) activities. Completed documentation for enterprise licensing of functionality in National Geospatial Agency's Commercial Joint Mapping Toolkit (CJMTK). Transitioned over 25 common ground tools to CJMTK and to the NATO Consultation, Command and Control Agency. Completed the JCTD.	5.500	-	-
Title: Riverine & Intercoastal Operations (RIO) ***Description:*** 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, supporting the Battlespace Awareness and Force Protection capability areas. Persistent detection and monitoring of riverine activities will be accomplished through networked Unattended Ground Sensors and sensor data used to enhance localized situational awareness. The first operational demonstration will be held at Stennis Space Center 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. This demonstration will be observed by U.S. Navy Operational Test and Evaluation Force (OPTEVFOR). The second RIO increment will focus on the jungle environment with a Technical Demonstration in Belize for Colombia and Belize. This Technical Demonstration will culminate with a Letter of Observation provided by OPTEVFOR. ***FY 2011 Accomplishments:***	1.800	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Conducted Operational Demonstration One at Stennis Space Center, Mississippi and conducted system integration discussions with Colombia. Conducted Technical Demonstrations of RIO in Belize with observers from Belize and Colombia. Spiral delivery of the capability to the U.S. Navy and U.S. Southern Command (USSOUTHCOM). Completed the JCTD.			
Title: National Senior Leadership Decision Support Service (NSLDSS) ***Description:*** NSLDSS provides senior decision-makers a method to develop rapid situational awareness to support response planning and execution to time-critical events of national significance. NSLDSS is a combined hardware and software system consisting of DoD and commercial databases, search engines, source repositories, network enterprise services, visualization tools, and web 2.0 capabilities. NSLDSS improves global situational awareness for senior leadership; improves course of action options; and improves the quality of information for senior leader decision-making in a collaborative environment. ***FY 2011 Accomplishments:*** Conducted Operational Demonstrations and completed the Operational Utility Assessment. Completed the transition to DISA. NSLDSS is in use by the Joint Staff and selected COCOMs. Reference implementations of the Attribute Based Access Control, XML repository, Common Data Mediation Service and Joint User Messaging are maintained by DISA on Forge.mil. Completed the JCTD.	2.650	-	-
Title: Global Observer (GO) ***Description:*** The GO is a transformational program to demonstrate a liquid hydrogen powered unmanned aerial vehicle, using a modified, internal combustion engine, capable of flying extremely long endurance (objective of six days on station) with a moderately sized payload capacity (380 pounds) at an altitude of 55-65,000 feet above mean sea level. GO will provide low-cost persistent surveillance and communications relay. GO will deliver a long endurance capability that supports placing a system into theater from garrisoned locations, reducing the number of forward bases required for world-wide operations, and relieving the operational tempo from other over stressed assets. ***FY 2011 Accomplishments:*** Completed hydrogen powered test flights achieving 18 hours duration at altitudes up to 30,000 feet, including carriage of the Air Force tactical communications suite payload. During flight test, the aircraft departed controlled flight and was a total loss. The project is under consideration for return to tech base.	2.400	-	-
Title: Medusa ***Description:*** Medusa demonstrates the employment of the Low Cost Guided Imaging Rocket aboard the U.S. Navy MH-60S helicopter against a multi-axis simultaneous attack from Fast Attack Craft and Fast Inshore Attack Craft. In this manner, U.S. 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	3.400	1.065	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
defense strategy. Additionally, the technology is readily adaptable for use against land-based targets. The COCOM sponsor is U.S. Central Command (USCENTCOM) and lead Service is the U.S. Navy. ***FY 2011 Accomplishments:*** Completed critical design review of rocket launcher. Completed systems integration lab testing of H-60 software configuration. Completed rocket and launcher integration and initial flight test. Completed Milestone B documentation and system development and demonstration contract package to support transition of Medusa rocket and launcher designs, software, concept of operations (CONOPS), and Tactics, Techniques, and Procedures (TTPs) to PMA-242 and PMA-299. ***FY 2012 Plans:*** Complete Military Utility Assessment and transition residuals to Programs of Record. Complete the JCTD.			
Title: Transnational Information Sharing - Cooperation (TISC) ***Description:*** TISC provides software tools for a non-classified portal for collaboration, planning, and assessment by external partners and interagency organizations. TISC allows disadvantaged users to use the portal at low or no cost in austere and minimal network infrastructure environments. TISC provides collaborative chat, identity management, translation and multi-lingual text chat, and Web 2.0 social networking tools. Outputs and efficiencies include improved planning and response to theater security cooperation challenges and stability and reconstruction operations. Technologies were demonstrated in the Haiti and Japan earthquakes and reduced the time and increased the effectiveness of disaster relief, humanitarian assistance, and stability operations. The TISC capability is scheduled to transition to the Unclassified Information System Program of Record in FY 2012. The lead agency is DISA. ***FY 2011 Accomplishments:*** TISC is in daily operational use at USSOUTHCOM, U.S. African Command (USAFRICOM), U.S. European Command (USEUCOM), and U.S. Pacific Command (USPACOM). Transitioned TISC portal to DISA Enterprise Computing Center Pacific 4Q FY 2011. Completed the JCTD.	1.100	-	-
Title: One Box One Wire (OB1) ***Description:*** OB1 provides secure operating systems hardware multiple independent level of security (HwMILS), 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 box housing multiple terminals connected to multiple data centers via one wire (network cable) — one box, one wire, multiple network and security domain access. OB1 will complete certification and accreditation testing of a secure operating systems in an HwMILS box and	1.650	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
certification and accreditation testing of an encrypted network cable for multiple computer networks at different security levels at USCENTCOM. ***FY 2011 Accomplishments:*** Completed technical demonstrations of the integrated product of test cases and evaluate artifacts. Completed test articles that attempt to address the full range of USCENTCOM requirements. Documented test concepts and plans for the test articles that may accelerate certification and accreditation (C&A) activities. Completed C&A documentation package. Provided a report that summarizes the technical results, identifies alternative ways forward, and makes technical recommendations. Completed the JCTD.			
Title: Mission Assurance Decision Support System (MADSS) ***Description:*** MADSS provides an integrated Command, Control and Communications (C3) operational and critical infrastructure relationships understanding by correlating data from different data sources, using web-based services, and secure netwok and automated data transformation services. MADSS provides improved responsiveness and predictive capability, rapid event analysis, and Warfighter analysis of alternatives development for network and critical infrastructure outages. ***FY 2011 Accomplishments:*** Conducted final technical and operational demonstration in 4Q FY 2011. Conducted technical demonstrations at selected COCOMs in 2Q and 3Q FY 2011. Finalized documentation for transition of MADSS functionality to DISA program of record in Program Executive Office – Mission Assurance. Transition scheduled for FY 2012. Completed the JCTD.	1.100	-	-
Title: Joint Recovery and Distribution System (JRaDS) ***Description:*** JRaDS developed and demonstrated 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 trailer systems currently in DoD inventory. The goal of this FoS is high reliability and parts commonality and modularity design to reduce 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. These aspects will expedite cargo movement from Sea Ports of Debarkation, Aerial Ports of Debarkation, 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 and light to medium weight Rotary Wing aircraft. 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. ***FY 2011 Accomplishments:***	1.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Completed the military utility assessment. Conducted final Operational Assessment and submitted final Operational Utility Assessment Report. The Army 101st Sustainment Brigade used the 40 Ton JRaDS during operations in Afghanistan and the Army retains and sustains both the 40 Ton JRaDs and 34 Ton JRaDs trailer residuals. The JRaDS capability is scheduled to transition to Program Executive Office (PEO) Combat Support and Combat Service Support. Completed the JCTD.			
Title: Cooperative Security Engagement (CSE) ***Description:*** CSE demonstrates operational concepts and tools for enabling joint, interagency, multi-national planning, coordination, and synchronization. CSE provides a framework for: inter-agency adaptive planning; regional and multinational/ event based information sharing; and integrated event assessment, operation, monitoring and evaluation. The JCTD sponsor is USSOUTHCOM and USEUCOM. The U.S. Agency for International Development (USAID) provides key technical and operational input. Transition will incorporate CSE capabilities and operational concepts into COCOM stability operations. Program Outputs and Efficiencies: (1) interagency adaptive planning process and tool; (2) streamlined regional and inter-agency assessments; (3) regional and muti-national information sharing; (4) repeatable and reusable frameworks; (5) mutually visible situation/event assessment and planning; and (6) collaborative implementation, monitoring, and evaluation tools. ***FY 2011 Accomplishments:*** Completed technical demonstration two within an operational context involving the cooperative security “community of interest” from USSOUTHCOM / USEUCOM / USAID areas of responsibility. Completed the operational demonstration and utility assessment in 4Q FY 2011 ***FY 2012 Plans:*** Final Operational demonstration and user evaluations. Transition to Defense Information Systems Agency Unclassified Information Sharing Architecture and USAID. Complete the JCTD.	2.200	2.455	-
Title: Precision Acquisition Weaponized System (PAWS) ***Description:*** PAWS integrates multiple precision weapons aboard organic tactical Intelligence, Surveillance, and Reconnaissance (ISR) platforms, and demonstrates the neutralization of threats. The weapon designs will allow multiple kills per sortie and engagement in environments where collateral damage and fratricide are unacceptable. PAWS resolves the inability of Special Operating Forces (SOF) ISR platforms to prosecute targets and significantly reduces risk to SOF compared to current missions which required direct target engagement. ***FY 2011 Accomplishments:*** Completed unmanned air systems (UAS) integration. Completed low collateral damage testing, certification, and integration with host UAS. Conducted end-to-end system testing, and two operational demonstrations. ***FY 2012 Plans:***	1.200	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Deliver residual units to U.S. Special Operations (USSOCOM). Complete JCTD.			
Title: Counter-Electronics High Powered Microwave System Advanced Missile Project (CHAMP)	5.200	3.834	-
Description: CHAMP demonstrates and assesses a multi-shot and multi-target aerial High Power Microwave (HPM) platform that is capable of degrading, damaging, or destroying electronic systems. A compact HPM payload will be integrated into an aerial vehicle to create the aerial HPM platform demonstrator. CHAMP is a multi-year project under sponsorship of U.S. Pacific Command for transition to an Air Combat Command program of record. The primary outputs and efficiencies to be demonstrated 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. ***FY 2011 Accomplishments:*** Completed component integration and ground testing. Completed operator training. Refined CONOPS and TTPs. Completed first operational demonstration. Demonstrated 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. Developed requirements and documentation to support transition. ***FY 2012 Plans:*** Complete flight test, Military Utility Assessment, and documentation for transition to a program of record. Complete the JCTD.			
Title: Joint Multi-Effects Warhead System (JMEWS)	5.100	0.532	-
Description: JMEWS demonstrates an updated multi-effect warhead system aboard the Tomahawk Land Attack Missile (TLAM). This warhead technology provides a leap-ahead capability against a widely varied target set, which includes hard and soft targets. In concert with this warhead, a Third-Party In-Flight Targeting (3PT) system will be demonstrated that allows dynamic targeting and re-tasking of the missile. 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 include documented CONOPS and TTPs. Production of the TLAM will incorporate the JMEWS warhead, and add the data link, 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 USCENTCOM; U.S. Navy is the Lead Service. ***FY 2011 Accomplishments:*** Delivered remaining warheads for completion of arena, insensitive munitions, and sled testing against representative targets. ***FY 2012 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Complete Joint Military Utility Assessment and transition to PMA-280. Complete the JCTD.			
Title: Tactical Edge Data Solutions (TEDS) ***Description:*** The Joint Requirements Oversight Council validated the need for TEDS in FY 2010. TEDS 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. TEDS focuses on exchanging data from Army and Marine Corps C2 Authoritative Data Sources for the C2 and Battlespace Awareness domains. The efficiencies gained will be the 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. Transition of the C2 Core extensions and Web services for translation and semantic mediation is planned for programs of record in the U.S. Army and U.S. Marine Corps. The output of TEDS will enable C2 systems to migrate to a Service Oriented Architecture environment. The final demonstration will be in FY 2012 and the JCTD will complete in September 2012 with transition expected in FY 2013 of data pilot services. ***FY 2011 Accomplishments:*** Demonstrated C2 Core data sharing between U.S. Army and USMC systems 1Q FY 2011. Demonstrated net-enabled Coalition Data Sharing using C2 Core in Coalition Warrior Interoperability Exercise with coalition partners 3Q FY 2011. ***FY 2012 Plans:*** Provide Net-Centric Information exchange capabilities that enable tactical C2 and tactical ISR systems to share data. Transition these capabilities by uploading the information exchange specifications to the DoD Metadata Data Repository. Transition Web services (computer code) to U.S. Army and USMC for use in tactical programs of record to enable mediation of data across their tactical C2 systems for position reporting, special activity reporting and spot reporting using U.S. message text formatting. Provide the repeatable processes for extending C2 Core mediation to other communities of interest such as logistics, force support, and cyber.	1.500	1.917	-
Title: Pacific Sail ***Description:*** Pacific Sail contains classified content only. The user sponsor is USPACOM and the Operational Manager is U.S. Pacific Fleet. This project integrates U.S. Air Force and U.S. 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 at-sea demonstration was scheduled for late 2011. ***FY 2011 Accomplishments:***	2.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Completed final operational demonstrations and military utility assessment with FY 2011 funds. Coordinated for follow-on transition. Initial transition was expected to be an interim operational capability, forming the basis for a larger Navy program. Completed the JCTD.			
Title: Rapid Reaction Tunnel Detection (R2TD) ***Description:*** R2TD demonstrates a set of detection and mapping technologies, and establishes procedures to provide Joint Force Commanders with a capability to detect, characterize, and interdict tunnels on the battlefield and beneath the U.S. borders. R2TD will accurately locate subsurface voids up to 100 feet deep; detect tunnel construction in real-time and report summaries every four hours; detect movement of contraband through tunnels in near-real time and report summaries every four hours; precisely locate tunnel axis, ingress and egress points; characterize physical dimensions of tunnels; and characterize internal features of tunnels including floor, shoring, lighting, ventilation, and water presence/flow. ***FY 2011 Accomplishments:*** Completed Tactics, Techniques, and Procedures (TTPs) tested and verified at Operational Demonstration for passive technologies. Passive technology made ready for rapid fielding. Residuals are currently on the U.S. southwest border. In 3Q FY 2011, quickly responded to a request for theater tunnel detection as a result of the Afghan prison break. R2TD completed the site survey with recommendations for which technologies are appropriate for which sites. These systems are recommended for deployment to satisfy the USCENTCOM Joint Urgent Operational Needs for tunnel detection. ***FY 2012 Plans:*** The integrated detection and characterization system will be demonstrated at the final Operational Demonstration at Yuma Proving Ground in 1Q FY 2012. Transition all detection and characterization capabilities inclusive of the full system of systems integrated capability to Joint Project Manager (JPM) Guardian. Complete the JCTD.	4.000	2.822	-
Title: Command and Control Gap Filler (C2GF) ***Description:*** C2GF 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. Additionally, the C2GF will refine the concept of operations and employment and TTPs necessary for air domain surveillance coordination. ***FY 2011 Accomplishments:*** Completed rescope of C2GF activities due to cuts in contributions from funding partners. ***FY 2012 Plans:***	2.000	2.112	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Complete work on air surveillance data fusion capability. Validate and demonstrate the C2GF architecture by incorporating data from representative air surveillance sensors. Conduct Operational Demonstration at a U.S. Northern Command (USNORTHCOM) exercise.			
Title: Joint Unmanned Air Systems (UAS) Precision Targeting (JUPT) ***Description:*** JUPT rapidly provides precision coordinates from UAS generated imagery for use with coordinate seeking weapons. JUPT provides the Joint Commander the ability to rapidly transition from observing to striking high value targets with coordinate seeking weapons in all terrain, while minimizing collateral damage. ***FY 2011 Accomplishments:*** Conducted technical demonstrations. Conducted limited utility assessments. Spiraled out capabilities as approved by NGA. ***FY 2012 Plans:*** Complete system integration. Conduct operation demonstrations and conduct Joint Operational Utility Assessments. Transition capability to U.S. Army Program Manager-UAS and USSOCOM. Complete the JCTD.	3.200	1.433	-
Title: Fixed Wing Advanced Precision Kill Weapon System (FW-APKWS) ***Description:*** FW-APKWS provides the legacy AV-8B and A-10 (optionally F-18 and F16) aircraft with a precision air-to-ground low collateral damage weapon for use in close controlled strike applications. FW-APKWS will demonstrate a weapon that increases the flexibility of current fixed-wing inventory and delivers 50 residuals (25 USAF, 25 USN) for limited use. ***FY 2011 Accomplishments:*** Completed source selection. Completed the initial draft of the Management Transition Plan. Conducted instrumented measurement vehicle testing on AV-8B and A-10 aircraft. ***FY 2012 Plans:*** Conduct technical and operational demonstrations. Finalize Technical Data Package, complete Military Utility Assessment and Operational Assessment, and modify Operation Requirements Document of APKWS to include fixed-wing production requirements. Deliver combat-ready residuals.	4.000	2.556	-
Title: Operational Three-Dimension (Op3D) ***Description:*** Op3D is a joint interagency program sponsored by USSOCOM. Op3D will develop and transition capabilities to quickly discover, manage, generate, exploit, disseminate, and accurately update 3D Geographic Intelligence data from multiple collection systems to the warfighter. The JCTD consists of three overlapping development and demonstration spirals. Residuals from the effort include an enhanced 3D data processing pipeline, warfighter/analyst exploitation tools, TTPs, concepts of operations, user guides and training packages. USSOCOM is responsible for requirements validation and transition management	3.200	1.406	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
for the Special Operations Forces community. The National Geospatial-Intelligence Agency will develop and transition successful Op3D technologies into programs of record. Op3D will spiral capabilities into Agency and Service Production Centers. ***FY 2011 Accomplishments:*** Improved 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. Incorporated new capabilities into theater operations and/or Continental United States (CONUS) production center use. Initiated Spiral two tasks. ***FY 2012 Plans:*** Execute, evaluate, and transition Spiral two and three tasks. Develop CONOPs, standard operating procedures, TTPs, user guides, and training packages for successful Spiral Three processes. Complete the JCTD.			
Title: Pre-Positioned Expeditionary Assistance Kit (PEAK) ***Description:*** PEAK is a modular system that provides potable water, information sharing, communications, and electrical power generation to first responders in the period immediately following a disaster event. The system enables regional Combatant Commanders to better provide humanitarian assistance and disaster relief and quickly respond to a myriad of crisis situations around the globe. In addition to supporting U.S. military commanders, PEAK can support the disaster assistance needs of agencies, international relief organizations, partner nations, and non-Governmental organizations. The outputs and efficiencies demonstrated are: a water purification system tested and certified to provide safe drinking water from either salt water or fresh water sources; an operationally demonstrated capability for solar powered communication system for emergency responders; and operational concepts of employment demonstrated with partner nations and non-Governmental partners. ***FY 2011 Accomplishments:*** Completed testing and operational deployment of a prototype kit during 2Q FY 2011. Completed water purification certification testing and operational assessment of the “spiral two” PEAK system with U.S. Joint Task Force-Bravo and partner nations in Honduras. Completed operational demonstration and assessment in 4Q FY 2011. Delivered one complete kit to U.S. Southern Command for operational use. ***FY 2012 Plans:*** Deliver one complete system to USPACOM in 1Q FY 2012 for training and operational deployment. Transition PEAK components, capabilities, training manuals, and procedures to user communities and sustaining programs. Complete the JCTD.	3.300	0.511	-
Title: Integrated SATCOM-GIG Operations and Management (ISOM) ***Description:*** ISOM will demonstrate real-time IP SATCOM situational awareness (SA) and a scalable and policy-based management system that enables dynamic allocation and provisioning of SATCOM resources. ISOM will integrate certain existing terrestrial and IP SATCOM management tools which will greatly improve the ability to make the most of underutilized	3.000	3.067	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
SATCOM resources or to resolve complex warfighter communications outages. ISOM integrates real-time situational awareness of SATCOM resources to provide a single, over-arching view of current SATCOM allocations and the load on these links. It then provides an automated ability to act on this information by dynamically re-allocating or re-provisioning the SATCOM resources given to IP SATCOM networks. ***FY 2011 Accomplishments:*** Completed CONOPS; TTPs; and training documents. Completed the integration of ISOM SA with resource allocation module, data collectors, and web services system. Completed Operational and System Architecture. Developed 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. Deployed ISOM Data Collectors at DoD Gateways (Northwest, Camp Roberts). ***FY 2012 Plans:*** Conduct operational utility assessment in an operational network environment. Integrate ISOM SA with the policy-based management capability that enables dynamic allocation and provisioning of SATCOM resources in an end-to-end over the air architecture. Develop a common information exchange schema based on Multi-Technology Operations Systems Interface (MTOSI) standard for integration with Defense Information System Network. Deploy ISOM Master Servers at Theater NetOps Centers (TNC) in the Continental United States. Implement the Shared Information and Data Model (SID) for SATCOM systems by applying the Service Oriented Architecture-compliant, TeleManagement Forum, Next Generation Operations Systems and Software framework. Finalize CONOPS, TTPs, and training documents. Prepare for initial deployment and transition to configuration management for sustainment. Complete the JCTD.			
Title: Medium Altitude Global ISR and Communication (MAGIC) ***Description:*** MAGIC demonstrates subsystem technologies that enable an UAS having 120 hour sortie endurance with nominal 1,000 pounds payload at nominal 15,000 feet altitude. MAGIC key technologies will enable persistent ISR UAS deployment, more efficient collection of pattern of life data, and potential cost savings over current UAS. ***FY 2011 Accomplishments:*** Conducted several trade studies to inform critical design decisions. Demonstrated avionics package in surrogate aircraft. Roll-out of first aircraft fuselage. ***FY 2012 Plans:*** Transition UAS subsystem technologies to U.S. Air Force for aircraft integration and flight demonstration. Complete the JCTD.	5.000	-	-
Title: National Technical Nuclear Forensics (NTNF) ***Description:*** NTNF will strengthen strategic nuclear deterrence by enhancing nuclear forensics capabilities supporting attribution after release of nuclear materials. Details are classified. NTNF will integrate advanced air and ground debris sample collection	4.500	5.717	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
technologies in both manned and unmanned platforms, and integrate DoD capabilities into the developing joint interagency CONOPS 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 NTNF Task Force personnel. ***FY 2011 Accomplishments:*** Detailed capability outputs are classified. Conducted technical testing, training and technical demonstration. Operationally demonstrated/exercised interim yield estimation methods for nuclear events, in addition to manual and robotic ground sampling collection capabilities to collect nuclear debris. Further developed and assessed CONOPS for integration into the developing joint interagency CONOPS for advanced sample collection with global applicability. ***FY 2012 Plans:*** Detailed capability outputs will be classified. Continue development with further technical testing, training and technical demonstrations. Operationally demonstrate/exercise (ODX) ground sampling collection platforms and airborne debris collection capabilities. Complete JCTD with culmination ODX of all three NTNF capabilities: yield estimation, air sampling, and ground sampling. Produce operational assessment. Publish Joint/Interagency CONOPS, TTPs, and DOTMLPF Change Recommendations. Complete the JCTD.			
Title: Rapid Site Exploitation (RSE) ***Description:*** RSE 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 media, and other combat forensic materials. A web portal will link key information sources maintained by multiple U.S. Government organizations. RSE will shorten site collection times from hours to minutes and speed forensic analysis from days to hours. ***FY 2011 Accomplishments:*** Provided integrated site exploitation kits and prototype web portal interface, interoperable with biometric, forensic, and document/media exploitation enterprises. Conducted initial utility assessment. ***FY 2012 Plans:*** Continue efforts to complete integrated site exploitation kits and prototype web portal interface, interoperable with biometric, forensic, and document/media exploitation enterprises. Conduct final utility assessment and transition residuals to a program of record. Complete the JCTD.	3.100	2.811	-
Title: Dark Fusion (DF)	5.372	5.324	1.500

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: DF is a classified capability to detect and track non-emitting maritime threats by integrating data from national collection capabilities. DF provides the ability to detect and track difficult maritime targets and increases maritime situational awareness. ***FY 2011 Accomplishments:*** Conducted technical demonstration with existing assets. ***FY 2012 Plans:*** Conduct technical demonstration with new sensors. Extended use expected to initiate in mid FY 2012. Transition capability to Office of Naval Intelligence Program of Record. ***FY 2013 Plans:*** Conduct Operational Demonstration and Utility Assessment. Complete the JCTD.			
Title: ADDER DeerPark ***Description:*** ADDER/DeerPark demonstrates a persistent Intelligence, Surveillance and Reconnaissance (ISR) capability by providing collection and geo-location of high value targets that use advanced communication devices. This effort upgrades a scalable airborne payload for the Senior Scout platform that provides search, detect, direction find, identify, and geo-location of signals of interest. This integrated technical approach delivers a sustainable capability that spirals to meet future Combatant Commander and U.S. Air Force requirements and utilizes open architecture. ***FY 2011 Accomplishments:*** Completed platform integration; conducted testing and training; and developed tactics, techniques and procedures documentation. Conducted payload demonstrations in field environments and completed operational assessment. Transitioned the residual capability to the USAF 645 Aeronautical Systems Group. Completed the JCTD.	4.284	-	-
Title: Commercial Radar Operational Support to SOUTHCOM (CROSS) ***Description:*** CROSS demonstrates the ability to task, on-demand, three commercial radar constellations and receive unclassified imagery to support operations and contingency planning activities. This capability provides USSOUTHCOM the ability to fulfill un-met lower resolution imagery tasks (e.g., Haiti disaster relief, Gulf oil spill, and specific classified military applications) within their area of responsibility. Upon successful demonstration at USSOUTHCOM, CROSS will 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. ***FY 2011 Accomplishments:***	4.500	1.118	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Established exploitation tool and standalone file transfer protocol (FTP) server at USSOUTHCOM; finalized operator training plans; completed the SAR architecture integration, conducted testing and problem resolution methodology; drafted transition plan to COCOMs and final security accreditation. Conducted vendor imagery buys, processor lease, and finalized CONOPS/TTPs. Conducted first technical demonstration. ***FY 2012 Plans:*** Establish the communications lease for Center for Southeastern Tropical Advanced Remote Sensing. Initiate NGA contracts to provide direct and routine tasking and support for long-term COCOM radar imagery buys. Conduct final utility assessment. Complete transition of the leave-behind capability for CROSS JCTD. Complete the JCTD.			
Title: Combat Commander Direct Participation, Transition Enabling, and Special Programs	35.059	39.128	40.000
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 COCOM Direct Participation; (2) JCTD Transition Enabling; and (3) Program Integration Office for interagency classified projects. Additional details follow: (1) COCOM Direct Participation: 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 and coordinate all operational interactions. Therefore, the JCTD Program enables COCOM staffs to directly participate in the Program, allowing each COCOM to select and fund an on-site JCTD manager, typically 1 full-time equivalent engineer with operational experience. (2) JCTD Transition Enabling: In FY 2011 the funding for JCTD Transition, Program Element 0604648D8Z, was transfered to the Program Element 0603648D8Z, which is reflected in the growth of this program. 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 one to two 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 Transition Enabling 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 2011 Accomplishments:*** COCOM direct participation funding enabled COCOM staff participation in developing and executing JCTD projects, ensuring direct warfighter input, and proper focus of JCTD projects. JCTD Transition Enabling funds targeted transition for projects that included medical resupply to forward units, squad-level immersive training, mapping the human terrain in forward areas, and			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
interagency disaster response information sharing. The Program Integration Office executed three continuing projects, developed additional projects, and continued to manage special security. ***FY 2012 Plans:*** COCOM direct participation continues to enable COCOM staff participation in developing and executing JCTD projects, ensuring direct warfighter input, and proper focus of JCTD projects. JCTD transition enabling funds will provide transition bridge funding for four to six projects, sustaining the efforts for a year until committed Program of Record funds are received. The Program Integration Office will execute special projects as approved, and develop new projects addressing the most pressing COCOM needs. ***FY 2013 Plans:*** Continue to provide COCOM direct participation funds to enable COCOM staff participation in developing and executing JCTD projects, ensuring direct warfighter input, and proper focus of JCTD projects. Sustain selected completed JCTD efforts until Program of Record funds are received. Develop and execute special projects as proposed by COCOMs.			
Title: Enabling Technologies	6.000	7.331	7.300
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 (less than one year) efforts that may lead to JCTD proposals, depending on the COCOM assessment and determination of technical maturity. ***FY 2011 Accomplishments:*** Projects included 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 and tracking items in transit, examination of a potential geospatial information exchange capability for friendly African nations, assessment of a capability to alert to Gobal Positioning System jamming or tampering, maturation of a military deception capability, collection of Arctic domain awareness capabilities for further integration, maturation of wastewater management capabilities for forward bases, planning for interagency air event sharing capability development, follow-on Persistent Ground Surveillance System fusion efforts, maturation of anti-jam precision guided munitions efforts, and others. Most of these investments matured into FY 2012 JCTD proposals. ***FY 2012 Plans:*** 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. ***FY 2013 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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:*** 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. The expected output and efficiency to be demonstrated is a reduction in the "unacceptably high risk" of extended electric grid outages by developing the capability to "island" installations while maintaining operational surety and security. ***FY 2011 Accomplishments:*** Tested circuit level micro-grid at existing hydrogen fueling station at Joint Base Pearl Harbor-Hickam, HI. Validated the cyber-security strategy for the utility electric energy management system at a national laboratory. Procured long lead items and started preparation for the demonstrations at Fort Carson, CO and Camp Smith, HI. ***FY 2012 Plans:*** Test larger smart micro-grid at Fort Carson, CO. Integrate existing Fort Carson photovoltaics with vehicle to grid energy storage and cyber security. Complete the JCTD.	4.300	1.597	-
Title: High Speed Container Delivery System (HSCDS) ***Description:*** HSCDS will integrate aerial delivery components to provide a cost effective, high speed ingress/egress, low-altitude, accurate Point of Need Delivery capability, which reduces exposure to threats for aircrew, aircraft, and ground receiving units. HSCDS will provide parachute-extracted Container Delivery System with C-130J and C-17 aircraft at maximum ramp open airspeed from as low as 250 feet above ground level. This provides warfighters the ability to conduct low altitude, fast and accurate resupply (up to 16,000 pounds of supplies via eight Containerized Delivery System bundles) to small combat units while maintaining aircraft maneuverability, thus reducing threat exposure. ***FY 2011 Accomplishments:*** Initiated integration of aerial delivery components and testing of HSCDS threshold capabilities on C-130J and C-17 aircraft. Conducted Operational Demonstration #1 in 4Q FY 2011. ***FY 2012 Plans:*** Continue integration of aerial delivery components and testing of HSCDS threshold capabilities. Execute Operational Demonstration #2 and rapidly field capability to theater. ***FY 2013 Plans:***	1.400	1.917	0.500

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Execute Operational Demonstration #3. 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 FY 2013. Execute seamless transition of HSCDS capability to FY 2014 program of record with U.S. Army Product Manager Force Sustainment Systems. Complete the JCTD.			
Title: Maritime Predator (MP) ***Description:*** MP will demonstrate the ability to conduct clandestine, intrusive unmanned maritime operations in high-threat restricted water areas of interest from a safe standoff. MP will provide several platform payload combinations as a residual capability. ***FY 2011 Accomplishments:*** Demonstrated one platform and one payload. Details are CLASSIFIED. ***FY 2012 Plans:*** Demonstrate two platforms and three payloads. Transition residuals for operational use. Details are CLASSIFIED. Complete the JCTD.	3.000	2.130	-
Title: Preferred Force Generator (PFG) ***Description:*** 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 course-of-action analysis, transportation feasibility, and assessments for rapid force availability. Net-centric technologies will be employed to provide the service across the enterprise. ***FY 2011 Accomplishments:*** Developed a PFG service that interfaces with the Joint Capabilities Resource Manager sourcing capability. Conducted Technical Demonstrations. ***FY 2012 Plans:*** Conduct Operational Demonstration #1 and a Limited Operational User Assessment via a joint exercise. Develop CONOPS on application of preferred forces across the planning process. Enable all interface requirements with existing and future force requirements systems. Incorporate Attribute Based Access Control. Transition to Defense Information Systems Agency. Complete the JCTD.	2.100	1.331	-
Title: Global Decision Support (GDS) ***Description:*** GDS enables senior decision makers to use newer technologies that can deliver decision-quality information for quicker understanding of the situation and provides increased time for course of action (COA) development, risk assessment, and decision-making. GDS technologies provide digital conferencing capabilities that augment the current analog capabilities in	1.400	1.331	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
the national senior leader conferencing capabilities and leverage Defense Red Switch Network and secure Voice Over SIPRNET 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 are 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 Accomplishments:*** Conducted National Event Conference for a missile event. Introduced automated conference initiation web services. ***FY 2012 Plans:*** Integrate the Global Sensor Integrated Network display with secret level secure mobile devices to support worldwide voice/data conferences. Transition GDS services to the Integrated Strategic Planning and Analysis Network Program of Record. Complete the JCTD.			
Title: Computer Adaptive Network Defense-in-Depth (CANDID) ***Description:*** CANDID will demonstrate the integration of Virtual Secure Enclaves (VSEs) inside existing tactical networks to enable network defense-in-depth and ensure C2 capabilities despite hostile attempts to hack, disrupt, and deny computer networks. CANDID will increase security of vital C2 capabilities in a cyber contested environment; and prevent infiltration from external threats, ex-filtration of protected information and C2 denial of service, and deliver cyber surveillance/situational awareness through fusion of heterogeneous sensor data. ***FY 2011 Accomplishments:*** Installed CANDID equipment on U.S.S. George Washington. Demonstrated and assessed prototype VSE SIPRNET C2 capability at USPACOM, U.S. Pacific Fleet/Joint Task Force 519, and functional components. ***FY 2012 Plans:*** Demonstrate leave behind/transition ready VSE SIPRNET C2 capability at USPACOM, U.S. Pacific Fleet/Joint Task Force 519, and functional components. Complete the JCTD.	2.400	4.015	-
Title: Movement Requirements Visibility – Theater (MRV-T) ***Description:*** MRV-T is software and the 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. MRV-T enables improved decision-making by offering prioritized courses of action to meet delivery timelines. MRV-T increases visibility of joint theater distribution requirements; improves agility and adaptability to best meet war	2.700	2.396	0.500

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
fighter movement requirements; and enhances visibility of theater modal capacity and movement requirements to effectively use available capacity and substantially reduces operations and support costs. ***FY 2011 Accomplishments:*** Initiated Software Certification and integration of capability to receive live Integrated Data Environment/Global Transportation Network data during 4Q FY 2011. Conducted technical tests and planned for technical demonstration of MRV-T technology in 1Q FY 2012. ***FY 2012 Plans:*** Conduct technical demonstration of MRV-T technology in 1Q FY 2012. Continue Software Certification and integration of capability to receive live Integrated Data Environment/Global Transportation Network data. Conduct operational demonstrations of Joint Movement Requirements Visibility and Management at USPACOM, USEUCOM, and USCENTCOM Deployment and Distribution Operation Centers during 2Q through 4Q FY 2012. ***FY 2013 Plans:*** Conduct final operational utility assessment. Residual capability will remain in operation for extended use. Determine the military utility of the technologies and procedures demonstrated. Transition to Agile Transportation for the 21st Century Program of Record. Complete the JCTD.			
Title: Collaborative Coalition Collection Environment (C3E) ***Description:*** C3E is a language independent intelligence data collection interface usable by U.S. and Coalition forces with initial fielding to support the Operational Control (OPCON) transformation on the Korean Peninsula. C3E reduces data collection errors by guiding the user to choose a variety of options using cascading drop-down menus. C3E will enable U.S./Korean personnel to describe their requirements in general military terms, symbols and graphics within their native language. C3E reduces reliance on specialized skills, language, and process that are beyond the shared experience of coalition operators. It improves the ability to gather, manage, and understand collection requirements and tasks in real time. ***FY 2011 Accomplishments:*** Provided Mission Manager & Requirements (MM&R) User Interface with enhanced map, graphic data submit, query, and synchronization capabilities. ***FY 2012 Plans:*** Obtain authority to operate on CENTRIX–K and Department of Defense Intelligence Information System (DoDIIS) Collection Framework with MM&R II User Interface. Conduct Technical and Operational Demonstrations during Key Resolve and Ulchi	0.400	2.662	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Focus Guardian Exercises. Demonstrate services for automated target analysis and transition C3E to the Joint Deployable Intelligence Support System program of record. Complete the JCTD.			
Title: SensorWeb 2 ***Description:*** SensorWeb will provide unified access to disparate sensor interfaces, data and services across the ISR Enterprise while delivering improved Command and Control / Battlespace Awareness using Distributed Common Ground Station Enterprise Component Services. SensorWeb will integrate sensors, services, and processing capability and assure access to Sensor Web data services in a single security domain (SIPRNET). SensorWeb 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 USSOCOM/ USPACOM sensor data, KeyMaker data and applications via SensorWeb on the Distributed Common Ground System (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 Accomplishments:*** The project started in late FY 2011. Deployed and evaluated an initial set of sensor-oriented web services software library and Extensible Markup Language (XML) tags for an initial set of sensor types. The operational capability will eventually transition via DCGS- Special Operations Forces/National System for Geospatial-Intelligence (NSG) Expeditionary Architecture (NEA) into Joint Intelligence Operations Center-Information Technology (JIOC-IT)/DCGS-Intelligence Community and provide access across NSG and DCGS Enterprise via the DCGS Integration Backbone (DIB). ***FY 2012 Plans:*** An optional FY 2012 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.	3.000	-	-
Title: Non-Persistent Desktop Browsing (NPDB) ***Description:*** 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, ex-filtration of protected information, Command and Control denial of service, and delivers Cyber Surveillance/Situational Awareness through fusion of heterogeneous sensors data. Infected sessions are restored in seconds and a pristine copy of the NPDB can be spawned quickly, and the infected copy quarantined for analysis, or discarded, without loss of functionality to the user, required of current desktop reimaging processes.	1.200	0.377	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Completed the build of the system test bed, the malicious code technical demonstrations, and the limited operational assessment. ***FY 2012 Plans:*** Conduct operational demonstrations and assessments and operational utility assessments. Transition NPDB within the Enterprise Solutions Steering Group 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. Complete the JCTD.			
Title: Gorgon Stare Smart Link (GS-SL) ***Description:*** GS-SL will demonstrate the ability to dynamically allocate motion video operational sub-views to available bandwidth at optimum resolution and Quality of Service (QoS), considering variables such as users' priorities and near-real time (NRT) multi-source intelligence and command and control cues. This will result in: enhanced monitoring and response to the environment (identify sub-views in accordance with dynamic user priorities, mission priorities, events, and multi-source intelligence cues); dynamically prioritized, encoded, and delivered views to optimize QoS; and decision support in accordance with available bandwidth and intelligence requirements. ***FY 2011 Accomplishments:*** Developed requirements and operational architecture. Completed sub-view prioritization and complex event processing in static format and conducted testing in systems integration laboratory utilizing real Gorgon Stare imagery. Drafted concept of operations and tactics, techniques, and procedures. ***FY 2012 Plans:*** Complete QoS management supporting intelligence requirements; and conduct operational utility assessment based upon a live-fly demonstration. Transition initial capability for Cpmplex Event Processing (CEP) association of near real-time data with operational sub-views and sub-view prioritization to GS Program of Record, Increment two aircraft. Deliver full smart information management and allocation capability with GS system upgrades to GS Program of Record. Complete the JCTD.	2.800	1.960	-
Title: Joint Warfighting Integrated NetOps (JWIN) ***Description:*** JWIN will consolidate independent Service network management information 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 for the integration of policy controls to enhance the Joint Force Commander's decision making process over network resources. Key benefits include enhanced situational awareness of network events on critical operations and end-to-end network distributed policy collaboration and management capabilities used to communicate authoritative direction over critical network resources. Joint tactics, techniques, and procedures will be identified to ensure a joint procedural construct is	2.000	2.456	1.251

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
established. JWIN provides the Joint Task Force Commander a consolidated network view which affords him/her the ability to monitor and influence tactical NetOps supporting associated missions to implement the Commander's intent. ***FY 2011 Accomplishments:*** Integrated and tested network management technologies and developed concept of operations required for effective Joint NetOps. ***FY 2012 Plans:*** Continue integration and testing of network management technologies. Develop an acquisition strategy to implement JWIN components. Develop Joint tactics, techniques, & procedures. ***FY 2013 Plans:*** Provide Joint/Military Utility Assessment. Provide PACOM with a leave behind capability to support current missions. Complete the JCTD.			
Title: Autonomous Technologies for Unmanned Aerial Systems (ATUAS) ***Description:*** 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 reducing the risks to the Warfighter and enabling improved operational readiness. ***FY 2011 Accomplishments:*** Integrated, ruggedized, and demonstrated a hand-held delivery location beacon. ***FY 2012 Plans:*** Demonstrate, certify ,and make available the beacon system for the Marine Corps Cargo UAS deployment in 2Q 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 2Q through 4Q. ***FY 2013 Plans:*** Continue integration and demonstration of autonomous en-route re-programming, in-stride multiple drop locations and autonomous retrograde. Conduct an operational utility assessment during 4Q FY 2013 focusing on autonomous delivery of multiple loads to multiple locations and the conduct of retrograde operations. Transition the technologies to existing UAS	4.900	5.324	5.000

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Programs of Record and an anticipated new Service or Joint Cargo UAS Program of Record in 4Q FY 2013. Determine the military utility of the technologies and procedures demonstrated. Complete the JCTD.			
Title: Countermeasure Expendable with Replaceable Block Elements for Reactive Unmanned Systems Multi-Mission Jammer (CERBERUS) ***Description:*** CERBERUS delivers a net-enabled modular expendable jamming system based on the U.S. Air Force Miniature Air-Launched Decoy (MALD) that employs replaceable nosecone payloads to counter emerging threats in the USPACOM area of regard. CERBERUS reduces overall mission costs by providing reconfigurable & flexible mission weapons. ***FY 2011 Accomplishments:*** Initiated the development of open architecture specifications and enhanced MALD mission planning software. Completed test planning for demonstration of non-coherent electronic attack payload nosecone assembly. Drafted the Implementation Directive. ***FY 2012 Plans:*** Technical demonstration of non-coherent electronic attack module. Complete advanced radar jamming payload assembly and data link electronic attack payload assembly. Conduct technical/operational demonstration of nose cone assemblies. Complete Operational Utility Assessment. Complete the JCTD.	2.250	3.940	-
Title: Arctic Collaborative Environment (ACE) ***Description:*** ACE will transition an open-access, web-based, Arctic regional and national decision-support system that integrates data from existing remote sensing assets to provide a monitoring, analysis, and visualization decision-support system based on earth observation data and modeling analysis. The primary outputs and efficiencies are: (1) increased Arctic maritime domain awareness to protect maritime commerce, critical infrastructure, and key resources; (2) obtain, analyze, and disseminate accurate data from the entire Arctic region, including both paleo-climatic data and observational data to enable accurate prediction of future environmental and climate; (3) serve as the foundation for an effective Arctic circumpolar observing network with broad partnership from other relevant nations; and (4) engage Russia as a full partner in the development and deployment of an Arctic awareness tool. ***FY 2011 Accomplishments:*** Completed User Requirements Document in 3Q FY 2011. Finalized the system architecture for the developmental server and identified candidate architectures for the operational system during 3Q and 4Q FY 2011. Conducted operational testing in 4Q FY 2011. ***FY 2012 Plans:***	3.500	1.282	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Identify and integrate existing Arctic environmental data sets and models in 1Q FY 2012. Deploy developmental server in an operational environment during Q2 through Q4 FY 2012.			
Title: VIVID POINTER (VP) ***Description:*** VP will demonstrate the ability to gather, correlate, and fuse low-latency National, Theater and Tactical data while removing sources and collection methods. This data will be distributed via Link-16 and Global Command and Control System - Joint at the SECRET releasable level in order to support counter-Integrated Air Defense and counter-Long Range Aviation missions. ***FY 2011 Accomplishments:*** Conducted software development from non-traditional ISR assets, defined interface format and latency requirements, tested dissemination architecture via the U.S. Strategic Command Data Integration and Fusion Center (DIFC), and evaluated timeliness and format. ***FY 2012 Plans:*** Test in exercises and pending successful demonstration, baseline and integrate into the DIFC. ***FY 2013 Plans:*** Transition residual capability to the DIFC. Complete the JCTD.	3.250	1.065	0.300
Title: Critical Runway Assessment and Repair (CRATR) ***Description:*** CRATR developed 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. CRATR evaluated existing, new and commercial technologies and procedures, and integrated the most successful to develop both material and equipment solutions. Successful solutions from early demonstrations will be used to create an interim modular repair kit which will form the Spiral One capability for theater. After a successful final demonstration, products from CRATR will be packaged into a final modular repair kit that will transition to the U.S. Air Force Airfield Damage Repair program. ***FY 2011 Accomplishments:*** Completed final pavement repair assessment report. Improved material packaging to extend shelf life. Conducted System Development Demonstration and transitioned Rapid Airfield Damage Assessment System to Airfield Damage Repair Program of Record. Completed the JCTD.	1.100	-	-
Title: Hardened Installation Protection for Persistent Operations (HIPPO) ***Description:*** HIPPO will develop and validate scalable, resilient-structured solutions to enhance continuity of operations in the face of major disruptions from war. Emphasis will be on capabilities required to enable/conduct persistent sortie generation	-	3.727	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
including the ability to recover, refuel/re-arm/unload-load, and launch aircraft and the systems that enable these activities. Solutions analysis will extend to port operations and critical Joint operations normally conducted in garrison to generate and deploy combat power. HIPPO will demonstrate a range of proven (weapons effect tested) sheltering methods and improved survivability capabilities for critical systems and a companion strategy for phased implementation with schedule and expected costs considering threat, location, mission and cost. ***FY 2011 Accomplishments:*** Completed Considerations for Installation Hardening and Candidate Technologies for Infrastructure Hardening research and studies. Completed geological analysis, surrogate threat weapon design, and analysis of hardened aircraft shelter (current design) against the emerging threat. Conducted technical testing, modeling and simulation, and technical demonstration of various hardening constructs against potential threat projectiles with appropriate explosive weights. ***FY 2012 Plans:*** Continue modeling and simulation, and technical demonstrations in testing scaled and/or full scale section(s) of various hardening constructs against potential threat projectiles with appropriate explosive weights. Update CONOPS, TTPs, and develop User Manual for HIPPO recovery, restoration and repair technologies. Conduct an operational utility assessment focusing on expedient, repair and recovery technologies during 3Q FY 2012. ***FY 2013 Plans:*** Conduct an operational utility assessment focusing on expedient, repair and recovery technologies during 1Q FY 2013. Residuals will be provided for extended use and sustained by the Air Force. Transition the hardening, repair and recovery capabilities to the Guam Strike and other appropriate programs of record during 1Q FY 2013. Conduct an operational utility assessment focusing on expedient, repair and recovery technologies during 3Q FY 2013. Determine the military utility of the technologies and procedures demonstrated. Complete the JCTD.			
Title: CLOUDBREAK Campaign Initiative ***Description:*** CLOUDBREAK will bring together JCTDs that focus on C2 among all COCOMs. CLOUDBREAK will drive a common “plug and fight” architecture that provides services and consumes data based on the Defense Information Enterprise Architecture (DIEA) and the Defense Intelligence Information Enterprise (DI2E) framework. CLOUDBREAK will demonstrate capabilities which can be provided as composable services on the Global Information Grid (GIG). Success will be achieved when capabilities from multiple programs of record, JCTDs, and other tools are reused by multiple COCOMs, based on common standards to meet changing needs. The CLOUDBREAK campaigns will demonstrate existing mature capabilities in Cyber, Ops/Intel, Situational Awareness and Regional Domain Awareness that meet COCOM priorities. ***FY 2011 Accomplishments:***	2.000	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Initiated system engineering and planning for CLOUDBREAK Campaign 1 to be executed in FY 2012 in USPACOM during Terminal Fury 12. Efforts accomplished include requisite planning for campaign execution, developing test plans, metrics, and training to deliver the following services: Common Operation Picture (COP) integration of the National Decision Support Service (NSLDSS) JCTD and Maritime COP; synchronization of J6/Network and Cyber tools, and a Quick Reaction Capability (QRC) for the J2 Joint Intelligence and Operations Center (JIOC). ***FY 2012 Plans:*** Partner funding required. Complete CLOUDBREAK Campaign 1 during Terminal Fury 12 and Valiant Shield 12. CLOUDBREAK will provide Operations and Intellengece services from a DI2E enabled JIOC; integrated data sources; dynamic, reconfigurable COP services including widget Mashups; Cyber Situational Awareness Services; and automated tools to sync Ops, Intel and Cyber thereby automating the C2 of C2 services. ***FY 2013 Plans:*** Partner funding required. Provide CLOUDBREAK Campaign during a relevant exercise with a theme of Humanitarian Assistance/ Disaster Response (HA/DR). The services planned for demonstration include Maritime/Regional Domain Awareness Services, unclassified sensor integration, interagency Situational Awareness and Collaborative services that facilitate the automation of HA/ DR C2.			
Title: Joint Extended Range Illumination Projectile (JERIP)	-	2.400	1.100
Description: The Joint Extended Range Illumination Projectile (JERIP) creates an improved Infrared and Visible Light Illumination capability for maneuver commanders. JERIP extends Joint Night Vision range by 5 kilometers; provides 75 percent increase in illumination footprint, eliminates demilitarization costs by re-using M483 155mm projectile shell bodies, and creates a procurement savings of $10 million. JERIP will complete development and demonstration in 3Q FY 2013, and transition into PEO Ammo in 4Q FY 2013. ***FY 2011 Accomplishments:*** Fabricated initial component hardware and implemented initial Load, Assembly and Pack (LAP) of projectiles for technical demonstrations. ***FY 2012 Plans:*** Conduct technical and operational demonstrations on approximately 600 projectiles of the 155mm Extended Range Infrared (XM1123) and the Extended Range Visible Light (XM1124). ***FY 2013 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Finalize technical and operational demonstrations and assessments on the 600 projectiles during 1Q through 3Q FY 2013, and initiate immediate transition to the initial product contract during 4Q FY 2013.			
Title: Combined End-to-End EMIO (Expanded Maritime Interdiction/Interception Operations) Performance Optimization (C3PO) ***Description:*** C3PO will provide Maritime Commanders, Naval Law Enforcement, and Coalition Allies with the capability to deliver, disseminate, and share Expanded Maritime Interdiction/Interception Operations (EMIO) boarding data (including crew identity verification) using available collection devices while it can be acted upon. C3PO will demonstrate and transition a cloud-based EMIO web application providing U.S. and Coalition force boarding teams near real-time End to End submission, dissemination, Identification verification, and mission support during maritime boarding missions. ***FY 2011 Accomplishments:*** Defined top-level operational requirements, and began system architecture. Reviewed current COCOM directives and maritime boarding Standard Operating Procedures (SOP) to incorporate into specific draft CONOPS for the C3PO system. Began transition planning with Navy resource sponsors, Programs of Record and the COCOM Operational Manager (OM). Produced a draft Implementation Directive (ID). ***FY 2012 Plans:*** Publish ID, Management/Transition Plan (MTP), Integrated Assessment Plan (IAP). Lock-in operational requirements; finalize system architecture and integration activities. Conclude the updated boarding CONOPS; finalize system development and technically test the C3PO system. Begin C3PO Operator training activities and finalize CONOPS. Continue transition planning; prepare for Operational Demonstration (OD) One. ***FY 2013 Plans:*** Conduct Operational Demonstration (OD) One at Naval Forces Central Command (NAVCENT) with attendance from U.S. European Command. OD One will be evaluated by operators and the COCOM appointed formal assessment activity. Transition the C3PO capability to Navy for operational use by DoD, Agency and partner nations. Complete the JCTD.	1.600	0.800	0.800
Title: Regional Domain Awareness (RDA) ***Description:*** RDA demonstrates a standards-based unclassified framework for information sharing between U.S. government agencies and international partners. RDA will install GOTS software to integrate air, land, and sea sensor data to create a multi-domain unclassified information sharing framework between U.S. interagency and local, tribal, and international partners. RDA will demonstrate (1) assured integration from air, maritime, and land sensors and networks; (2) user defined monitoring and alerting; (3) selective sharing of situational awareness and alerts to multiple defined users; (4) CONOPS and TTPs supporting the sharing of unclassified information to non-PKI (Public Key Infrastructure) users; and (5) access to unclassified data and services. ***FY 2011 Accomplishments:***	1.000	4.000	0.800

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Technical selection of GOTS framework. Technical Demonstration 1 executed during Trident-Warrior 2011 Field Experimentation exercise and demonstrated proof-of-concept data sharing between USSOUTHCOM, the United Kingdom, and France. Data standards adaptation developed in accordance with the National Information Exchange Model for Maritime (NIEM-M) format; and versions 1 and 2 of the NIEM-based Feature Description Document were released. ***FY 2012 Plans:*** Technical Demonstration 2 and 3; integration of partner nation data and services; federated services between multiple sites; data mediation services; Limited Operational User Assessement (LOUA); and initial transition to Defense Information Systems Agency (DISA) Multi-National Infomation System (MNIS) and USSOUTHCOM. ***FY 2013 Plans:*** Technical Demonstration 3; demonstration of partner nation data and services, federated services between multiple sites, and data mediation services; LOUA; and initial transition to DISA MNIS and USSOUTHCOM.			
Title: Three Dimensional Landing Zone (3D-LZ) ***Description:*** 3D-LZ will deliver an integrated sensor suite capable of providing rotorcraft pilots with situational awareness during degraded visual environments encountered on takeoff and landings, cable warning and obstacle avoidance cues, and general terrain awareness for safety of flight. The program will deliver an integrated turret to the Global Reach Program Office. ***FY 2011 Accomplishments:*** Draft Implementation Directive completed. Conducted initial Integrated Management Team (IMT) meeting. ***FY 2012 Plans:*** Complete Implementation Directive (ID) and Management Plan (MP). Begin turret design. Conduct bench and field tests on major subsystem components. ***FY 2013 Plans:*** Conduct technical demonstration via flight test of 3 dimensional imaging sensor. Complete turret integration. Conduct operational demonstration and assessment. Complete JCTD and transition to U.S. Air Force Program of Record.	0.250	5.300	7.050
Title: Anti Jam Precision Guided Munitions (AJPGM) ***Description:*** AJPGM will deliver precision navigation capability is severely GPS-jammed environments. AJPGM will also deliver home-on-jam capability. Specifics related to technologies, current capability, and threats are classified. ***FY 2011 Accomplishments:***	0.250	6.000	5.000

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Completed draft Implementation Directive. Conducted initial Integrated Management Team (IMT) meeting ***FY 2012 Plans:*** Complete Implementation Directive (ID) and Management Plan (MP). Initiate design of anti-jam navigation kit. Conduct technical demonstrations of home-on-jam kit in late FY 2012. Conduct variety of field and hardware in the loop tests on major subsystem components. ***FY 2013 Plans:*** Conduct technical demonstration of anti-jam kit. Complete system integration into test vehicle. Conduct operational demonstration and assessment. Complete JCTD. Transition to U.S. Air Force program of record.			
Title: Joint Strike Fighter (JSF) Enterprise Terminal (JETpack 5th to 4th) ***Description:*** JETpack 5th to 4th supports the COCOM's airborne gateway needs to distribute 5th Generation (Gen) data to 4th Gen fighters by translating their tactical data link into Link-16 messages that can be viewed by the 4th Gen aircraft. JETpack will demonstrate: (1) four flyable prototype dual-band, multi-beam antennas, (2) two JET terminals, and (3) two dual-band remote electronics. ***FY 2011 Accomplishments:*** Designed prototype component hardware and implemented initial bench test protocols. ***FY 2012 Plans:*** Conduct technical demonstrations to include the JET terminal with Intra-Flight Data Link (IFDL), and a dual-band, multi-beam antenna lab test. ***FY 2013 Plans:*** Finalize operational demonstrations and assessments on the flyable prototypes during 2Q through 4Q FY 2013, and initiate transition to the F-15C community.	1.000	8.000	6.000
Title: Minor Resource Projects (less than one million dollars) ***Description:*** The JCTD program completed and transitioned the following projects: Future Immersive Tranining Environment (FITE), Net Zero Plus (NZP), Joint Medical Distance Support & Evacuation (JMDSE), Daily Watch, Protection and Operation of IP-secure Network Terrain (POINT). Sea Tracker (ST) will continue into FY 2012. ***FY 2011 Accomplishments:***	2.876	0.640	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Completed and transitioned: Future Immersive Tranining Environment (FITE), Net Zero Plus (NZP), Joint Medical Distance Support & Evacuation (JMDSE), Daily Watch, Protection and Operation of IP-secure Network Terrain (POINT). ***FY 2012 Plans:*** Sea Tracker (ST) will conduct extended user evaluation. Additional details are classified.			
Title: FY 2012 Combantant Commands (COCOM) Priorities ***Description:*** The first group of FY 2012 JCTD projects were identified under the revised JCTD selection process beginning with a Candidate Nomination Board in June 2011 followed by a Candidate Decision Board (CDB) in August 2011. This allows the Department to rapidly execute the JCTDs needed in FY 2012 to meet the COCOMs most pressing needs as soon as FY 2012 funds become available. COCOMs have proposed projects addressing a range of capability gaps, including cyber defense, logistics, information distribution, interagency collaboration in humanitarian assistance/disaster relief, operations in communications and GPS jamming environments, autonomous systems in current operations, advanced munitions, energy efficiencies, and space systems. Additional COCOM proposals will be acted on throughout the year to address emerging needs as funds are identified. ***FY 2012 Plans:*** Anticipate starting approximately 15 projects in FY 2012. ***FY 2013 Plans:*** Fund the second year of the FY 2012 projects that are scheduled to proceed to a second year.	-	22.018	19.250
Title: FY 2013 Combatant Commands (COCOM) Priorities ***Description:*** JCTD projects that support COCOM priorities are linked directly to COCOM integrated priority lists and validated joint operational needs statements. The first group of FY 2013 JCTD projects will be identified under the JCTD selection process beginning with a Candidate Nomination Board in June 2012 followed by a Candidate Decision Board (CDB) in August 2012. This allows the Department to rapidly execute the JCTDs needed in FY 2013 to meet the COCOMs' most pressing needs as soon as FY 2013 funds become available. Additional CDBs will be held throughout the year to address emerging COCOM needs. JCTDs indentified in these CDBs will be initiated as funds are identified. ***FY 2013 Plans:*** Fund the first year of the FY 2013 projects that are selected by the Candidate Decision Board.	-	-	61.912
Accomplishments/Planned Programs Subtotals	185.591	171.807	158.263

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*

C. Other Program Funding Summary ($ in Millions)

N/A

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 program documentation addressing the new capabilities does not exist. 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 Program of Record 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 listed on General Services Administration schedule, and made 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
- 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 Deputy Assistant Secretary of Defense, Rapid Fielding 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: 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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*

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, or procurement availability on GSA Schedule.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	28.032	23.185	25.393	-	25.393	30.395	37.210	38.461	39.189	Continuing	Continuing
P663: *Network Communications Analysis*	28.032	23.185	25.393	-	25.393	30.395	37.210	38.461	39.189	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, and 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 is not supported by network theory, network design nor analysis tools. These tactical edge technology challenges cut across all warfare domains (space, air, ground, and 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: 1) the need for expanded wireless reach where no communications infrastructure exists, and 2) 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, Office of the Secretary of Defense, and defense agencies.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense					DATE: February 2012
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	30.035	23.890	28.900	-	28.900
Current President's Budget	28.032	23.185	25.393	-	25.393
Total Adjustments	-2.003	-0.705	-3.507	-	-3.507
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	3.664	-			
• SBIR/STTR Transfer	-0.445	-0.546			
• Congressional Adjustments	-5.000	-	-	-	-
• Economic Assumptions	-0.127	-	-	-	-
• FFRDC	-0.088	-0.159	-	-	-
• Other Program Adjustments	-0.007	-	-3.507	-	-3.507

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P663: *Network Communications Analysis*	28.032	23.185	25.393	-	25.393	30.395	37.210	38.461	39.189	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 is 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 and 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 Department of Defense (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 2013 Office of Secretary Of Defense		DATE: February 2012
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 test beds especially 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 request for proposal is sent out with specific technical focus area and evaluation criteria for each project. The proposals are graded by a peer review team who score each proposal based on 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 2011	FY 2012	FY 2013
Title: Tactical Mobile Networking	4.496	5.336	5.268
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 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, Satellite Communications (SATCOM) and Tactical NetOps, Tactical Edge Protocol Evaluation and Experimentation (TEPEE), Channel Modeling for Software Defined Radios in Real Atmospheric Environments, and Communications for Autonomy. 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 2011 Accomplishments:***			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Continued work in reliable unmanned aerial vehicle (UAV) data transport and technology transition. Developed UAV-based cloud computing architecture to provide assured computing capacity on demand at the tactical edge. Improved performance consistency of Transmission Control Protocol (TCP) connections over UAV wireless channels by exploiting channel diversity and developing performance models. - Ended work on Heterogeneous Intelligent Filtering Extensions (HIF). - Expanded suite of protocols to include the ability to handle multiple flows simultaneously and multicast traffic. Worked to improve network coding protocol. - Analyzed common approaches to determine if certain configurations result in poor or undesirable performance. Used the results and use the performance as feedback to modify protocols. Released protocol results as open source software. Updated scenarios and enhance protocols. - Continued the research fundamental applied science issues in group-based structures in self-organizing networks. Continued research and development of extensions to XMPP Overlay (XO) and group-based reliable messaging. XO-based reliable server-less group XMPP chat were part of coalition operations experiments (French and German militaries) at Ft. Dix in October 2010. Continued Disruption-Tolerant Networking (DTN) research into group-based extensions and approaches. Authored NORM Protocol standard. - Completed a study on SATCOM and Tactical Network Operations (NetOps) control architectures and interactions, including a draft common architecture approach. Provided a campaign plan for joint strategic and tactical concept of operations for integrated NetOps and recommendations for future work. - Completed experimental evaluation of current state of the art protocols. Provided support for flight evaluation of select tactical edge protocols and technologies. Completed research and experimentation of enhanced cutting edge protocols with autonomy enhancements and hybrid approaches. - Performed a suitable validation and analysis of the channel model. Automated tool developed to compute the channel impulse response that accounts for range-dependent refractivity and terrain. Obtained and developed numerous refractivity and terrain profiles to test the model. - Deferred Communications for Autonomy work until FY 2012.			
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. Document compressive sensing based network protocols for fast distribution estimation, spectrum sensing, and medium access control. Investigate network protocols for simultaneous compression and encryption. - Share Cooperative Heterogeneous Comms information with programs of record including Joint Tactical Radio System (JTRS) and Warfighter Information Network-Tactical (WIN-T). Implement a prototype version on Lincoln Labs mobile vehicle testbed.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 Department of Defense (DoD) operators. Publish definitions of the impact of routing policy configurations on the interoperation and performance of connection disparate networks. Continue advanced protocol development. Conduct emulation test. - 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 Disruption-Tolerant Networking (DTN) findings in group-based communications. Continue research and development and identify transition opportunities for XMPP Overlay (XO) capability. - Submit a paper on satellite communications and tactical networks project to Military Communications (MILCOM) Conference 2012. - Conduct flight testing for tactical edge protocol project. - 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. - 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. Demonstrate and define the communications requirements needed to support the growth and evolution of unmanned and autonomous systems (for example, unmanned aerial vehicles (UAV) and ground robotics).			
FY 2013 Plans: - Field test and evaluate 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. Work with Small Business Innovation Research (SBIR) contractors on technology transition. - Research and develop technical systems integration for the Cooperative Heterogeneous Comms technologies information with programs of record including Joint Tactical Radio System (JTRS) and Warfighter Information Network-Tactical (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. - Continue document/update 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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
long-term consistency versus adaptive real-time delivery in mobile and disrupted network environment models. Summarize DTN findings in group-based communications. Identify transition opportunities for XO capability. - Prepare a study report on dynamic SATCOM access schemes and recommendations for all-digital terminal control efforts. Submit a MILCOM 2013 paper on SATCOM and tactical networks project. - Conduct flight testing for tactical edge protocol project. - Test and evaluate an 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. - Continue define, develop and demonstrate 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	4.944	4.810	4.748
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. This project is 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 2011 Accomplishments:*** - Incorporated additional NetOps/Situational Awareness components by specifically integrating security management and information assurance (IA); developed data mining techniques to offer automated network troubleshooting recommendations; continued work on topology detection; continued research into flow-based analysis; worked on synchronization techniques to allow for timing differences at remote nodes; integrated IA techniques to detect unauthorized activity and researched integration of multi-layer analysis. Worked with appropriate Joint demonstration projects including a potential Joitn Capability Technology Demonstration (JCTD) focused on NetOps. - Expanded Adaptable Information Distribution (AID) work with Disruption Tolerant Distribution and enhanced Multi-Topology Routing Distribution for NATM.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Continued field testing of JINX tool and transition tool to joint environment. Created software that produces live network common operating picture (COP) from Visio diagrams. Began development on visualization of JINX on multi-touch table device. Created Android operating system (OS) implementation of Naval Research Lab (NRL) server-less chat using 802.11 for JINX. Supported Joint Warfighting Integrated NetOps (JWIN) JCTD. - Continued performing emulating research management test in Lincoln Labs emulation testbed. Created semantic network descriptions & policy language design. Produced final report on test results. - Continued installation of NEEMO on Network Emulator to further research scalability issues and integrate network management into Extendable Mobile Ad-hoc Network Emulator (eMANE). Developed data mining techniques to offer automated network troubleshooting recommendations. Continued research/implementation of network topology discovery. Continued research into flow-based analysis. Implemented open-sourced GUI (Graphical User Interface) to support real-time graphing capabilities. Expanded NEEMO capability for interaction with external network management products. Conducted NEEMO test and evaluation with the U.S. Marine Corps. - Extended the developed architecture and Crypto Host Interface Control Document (ICD) to: 1) support separate Ethernet data ports for multiple waveforms / applications at different classification levels, needing Type 1 cryptography (using Programmable Embeddable INFOSEC Product (PEIP) technology); 2) allocate channel usage within the Crypto for multi-level security (MLS) and the different application needs; and 3) support secure remote command and control (C2) to dynamically establish crypto channels, load black keys, mission task orders, control the red/black processor cards, etc. - Created prioritization and multicast for the wideband networking waveform (WNW) target. Wrote reports for throughput comparison and algorithm investigation. Completed, coded, and tested the Dual-LP scheme. Created a report on the Dual-LP Scheme and packing problems. - Began initial network manager integration of dynamic policy management (DPM) in tactical communications lab. Identified candidate policy-based network management partners.			
FY 2012 Plans: - Continue to incorporate additional NetOps/Situational Awareness components by specifically integrating security management and IA; implement multi-layer analysis capabilities; integrate 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 to show integration and information sharing in the joint network management environment. Conduct experimentation in network monitoring anomaly detection. Deliver the software. - Mature interactive design and media (ID&M) software for JINX by incorporating server-less tactical chat interoperable with existing systems, system center operations manager (SCOM) enhanced with JINX-based Management Packs, and network			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
visualization tools. Create Network scan software to capture existing network organization. Integrate Visio-based visualization tool to enable user-defined displays. - 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) JCTD. Integrated IA techniques to detect unauthorized activity. Investigate tactical connectivity issues involved in network management. - Apply crypto architecture to the Software Reprogrammable Payload (SRP). - Develop plans for a Joint Demonstration of the optimal scheduling in time division multiple access (TDMA) Networks capability. Submit MILCOM papers on the topic. - Optimize DPM algorithm. Conduct small scale lab demonstration.			
FY 2013 Plans: - Conduct small scale lab demonstration and create a distributed joint NetOps development experimentation platform in at least three sites. - Continue to improve/incorporate additional NetOps/Situational Awareness components by specifically integrating security management and IA. Implement multi-layer analysis capabilities. Integrate 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. - Demonstrate, test and evaluate the 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. - Deliver 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 based on the results of demonstrations of the tactical resource management and control project, - Focus on the field testing/deployment of NEEMO and other products. Continue to expand capability to interact with external network management products. Conduct/support the Joint Warfighting Integrated NetOps (JWIN) Joint Concept Technology Demonstration (JCTD). - Test and evaluate cryptographic architecture of the Software Reprogrammable Payload (SRP).			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Conduct a Joint Demonstration of the optimal scheduling in TDMA Networks capability. Submit MILCOM technical papers on the topic.			
Title: Spectrum Management Tools and Analysis	3.862	3.857	3.808
Description: This project is for the development of measurement-based spectrum management tools. Applications will be developed and tested in a laboratory environment. Project is executed by the Army and results are 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 Allocation (DSA) Spectrum Analysis Software, Cognitive Networking Radio Platform (CNRP) and Cognitive Radio Algorithmic Fusion Technologies for Spectrum Management (CRAFTSMAN), 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 (SAEDOE), 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 2011 Accomplishments:*** - Integrated next generation Spectrum Management tool set in existing operational environments (i.e., Spectrum management centers). Developed 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. - Created ad-hoc negotiation schema, subnet fragmentation algorithms, subnet reconstitution algorithms, and multi-hop policy requirements for DSA. - Began 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. - Designed low-cost sensor for SIGINT assisted spectrum management. Presented year-end report. - Conducted electromagnetic environment survey, modeling, manipulation, simulation and emulation. Extended current cognitive radio testbed for more complex testing configurations and parameters. Continued to study capabilities of Cognitive Radio (CR) for electronic warfare (EW) as well as a counter to implementation of CR. NRL and CERDEC jointly produced DSA testing framework. Created DSA radio and network testbed. - Continued research on stable throughput of cognitive radio networks and developing capacity scaling laws for cognitive radio networks. - Performed DANTE subsystems tests. Designed, simulated, fabricated and tested 1.7 to 2.1 GHz DANTE subsystems. Created conceptual design of multiple radio per node architecture.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Supported joint Service enhancements to the DSA software. Studied RF man-made noise effects on DSA. Completed Phase 2 of the DSA security design. - Demonstrated a wireless, airborne and ground based spectrum sensing network. Created software visualization tools to convey real-time sensed spectrum space. Submitted data sets to the DoD wireless Networking Library (WNL). Began investigating spectrum information dissemination. - Deferred Integrating Comm. & Electronic Attack work until FY 2012. ***FY 2012 Plans:*** - Demonstrate the integrated next generation Spectrum Management tool set in existing operational environments (i.e., Spectrum management centers), which 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. Develop set of spectral scenarios to evaluate DSA radios. Expand and increase fidelity of modeled DSA environment. Explore EA (Electronic Attack) effectiveness against cognitive jammers. - 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. - Integrate the 15 GHz DANTE subsystems into a monolithic system. 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 additional data sets into the DoD WNL. - 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. Demonstrate the ability to share functions across the two missions and illustrate the benefit to each mission. ***FY 2013 Plans:*** - Develop transition/insertion plans for the integrated next generation Spectrum Management tool set in existing operational environments (i.e., Spectrum management centers), which will extend policy-based reasoning to encompass Comms-EW coexistence requirement; and 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Test and evaluate the Comms/EW interaction schema, active jammer algorithms, reactive jammer algorithms, and multi-hop policy solutions for DSA. - Develop 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. Create cooperative sensing strategies for heterogeneous environments. - Model/prototype the 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. - Demonstrate multiple-radio-per-node DANTE network. - Continue to develop/refine DSA security design to make it more comprehensive. - Continue to develop/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.			
Title: Integrated Network Management Capability	5.900	6.998	6.909
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. The project is executed jointly by the Navy, Army and Air Force. The plan is to 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 WIN-T, 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 2011 Accomplishments:***			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Performed a joint Service lab inter-connection specifically using a "chat" capability to validate experimentation. Initiated selection and evaluation of next generation integrated network management software tools. Integrated next generation integrated network management software tools in existing operational environments (i.e., TNOCs, JTF-GNO). - Improved ease of use (through GUI enhancements, etc.) and accessibility of VAN testbed. Developed 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. Performed scalability and application testing. - Continued to administer WNL (including updating software and security patches) and increase usage. - Completed emulation infrastructure expansion. - Implemented models of additional DoD command and control tactical edge networking waveforms including legacy and anticipated waveform technologies in Extendable Mobile Ad-hoc Network Emulator (eMANE). Incorporated initial simulation-in-the-loop capabilities provided by other mobile network modeling tools and RF propagation prediction models into Extendable Mobile Ad-hoc Network Emulator (eMANE) framework. Validated EMANE emulated network performance against known data sets collected from field experimentation. Began advanced tactical data link modeling. Experimented to validate EMANE emulated network performance against known data sets collected from field experimentation. Conducted third DoD Mobile Network Modeling Workshop. Made refinements to traffic generators, visualization, and analysis tools. Initiated development work to allow emulation systems to model different security functions. Began Phase 2 of SRW (Soldier Radio Waveform) model development. - Completed paper of findings/results associated with protocol development for MlabCUNE. Completed final technical report. Transitioned findings to ENVE project. Developed hybrid AF emulation environment that integrates with EMANE. Created bi-dimensional statistical data-driven propagation model. Used propagation models to emulate specific flight test and study airborne network protocols and applications. - Conducted experimental evaluation of current state of the art tactical edge protocols.			
FY 2012 Plans: - Develop a user-friendly 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. Add "faster-than-real-time" simulations in the VAN testbed. - Continue to recruit and manage the data sets in the WNL. - 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 Extendable Mobile Ad-hoc Network Emulator (eMANE). Complete Phase 2 of SRW model development. Conduct 4th DoD Mobile Network Modeling Workshop.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Conduct flight testing of selected tactical edge protocols and technologies. ***FY 2013 Plans:*** - Continue the development of optimal virtual network configuration and management toolset. Create user test network instrumentation and technical support capability. - Continue to update, recruit and manage the data sets in the WNL. - 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. - Continue development of advanced tactical data link models, radio module interfaces, and automated experiment test-control 'harness' for EMANE. - Develop transition/insertion planning for the selected tactical edge protocols and technologies. - Develop and conduct a JCTD or other major demonstration to showcase capabilities developed.			
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 is sent out with specific technical focus area and evaluation criteria for each project. The proposals are 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 2011 Accomplishments:*** - Created and distributed FY 2011 RFP. Conducted a Peer Review Conference where proposal candidates presented their work to the Peer Review teams.	6.783	-	-
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, and signal and data processing or exploit waveforms to improve Anti-Jam resistance, network throughput and scale, or network packet routing, and improve these metrics at low cost and without sacrificing interoperability. 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 FY 2011. Beyond-Link16 project began in FY 2011.	2.047	2.184	4.660

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 Accomplishments:*** - Enhanced Performance for Highband Networking Waveform (HNW) including Net Entry at Extended Range, AFC2IC Airborne Network Management Analysis, and Advanced Waveform Support projects transferred from P662 starting in FY 2011. Began Beyond-Link16 project. - Began development of early prototypes for Anti-Jam improvements field testing. Identified transition opportunities. Goal was to demonstrate capabilities in FY 2012. Began planning for additional improvements to increase throughput, scale and IP-networking capability. Identified other candidate improvements. Evaluated operational impact of potential improvements. Transferred Enhanced Performance for HNW including Net Entry at Extended Range, AFC2IC Airborne Network Management Analysis, and Advanced Waveform Support projects from P662. - Demonstrated the range advantage of a single tone waveform. Integrated active beam and phase-locked loop steering based on signal levels. Conducted preliminary waveform performance evaluation. - Completed Phase II of the Joint Aerial Layer Network (JALN) Management Study. Created formal joint concept of JALN control. Entered and completed Joint Concept Development and Experimentation (JCD&E) Process. - Integrated 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 Office of Naval Research (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. Create AF Joint Concept and begin formal coordination. - 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. ***FY 2013 Plans:*** - Develop computationally efficient RF propagation models and continue the development of more efficient routing schemes for next generation directional antenna mobile routing networks. Prototyping the cross-layer radio-to-router interface and examine advanced routing load balancing over mixed media networks. Test and evaluation (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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Support JALN Network Management Assessment of Alternatives. Support JALN DOTMLPF Change Requests. Assist with Validation of JALN Network Management Requirements. Obtain approval of AF Joint Concept. - 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 capabilities. - Develop and conduct a JCTD or other major demonstration to showcase capabilities developed.			
Accomplishments/Planned Programs Subtotals	28.032	23.185	25.393

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 U.S. Central Command Area of Responsibility. 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; and prototype joint network management tools.

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

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

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

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

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	3.888	4.117	13.754	-	13.754	13.797	18.677	18.681	19.021	Continuing	Continuing
P366: *Data to Decisions Advanced Technology*	3.888	4.117	13.754	-	13.754	13.797	18.677	18.681	19.021	Continuing	Continuing

Note

The Joint Data Management program will be restructured in FY 2012 to evolve into the revised Data to Decisions program that addresses challenges from the Quadrennial Defense Review and Combatant Commanders. This revised program builds on the FY 2010 and FY 2011 accomplishments with increased objectives and technology development goals 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 and other operational leaders 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 2013 Office of Secretary Of Defense					DATE: February 2012
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	6.289	9.235	14.140	-	14.140
Current President's Budget	3.888	4.117	13.754	-	13.754
Total Adjustments	-2.401	-5.118	-0.386	-	-0.386
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.301	-			
• SBIR/STTR Transfer	-0.063	-0.090			
• Congressional Adjustments	-2.000	-5.000	-	-	-
• Economic Assumptions	-0.022	-	-	-	-
• FFRDC	-0.014	-0.028	-	-	-
• Other Program Adjustments	-0.001	-	-0.386	-	-0.386

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P366: *Data to Decisions Advanced Technology*	3.888	4.117	13.754	-	13.754	13.797	18.677	18.681	19.021	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Joint Data Management (JDM) program will be restructured in FY 2012 to become a more encompassing Data-to-Decision program. This Data-to-Decision program builds on the FY 2010 and FY 2011 accomplishments with 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, data creation 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 establishes 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 available and required to support 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 builds 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 and applicability. A Transition team will host the developed algorithms as services in a spiraling prototype system that will support rapid prototyping and transition.

The Applied Research program concentrates 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 2011	FY 2012	FY 2013
Title: Operational Initiative	0.989	1.047	3.499

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 collects and manages 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 is responsible for determining methods for providing unclassified data sets to the performers. ***FY 2011 Accomplishments:*** - Several Counter Insurgency (COIN)-related missions were chosen as challenge problems for the development team. The immediate technology problem common and necessary to all the challenge missions is robust tracking of objects. The focus this year was on developing a set of tools to assess progress on vehicle tracking. - Unclassified and Classified existing Wide Area Motion Imagery (WAMI) and Ground Moving Target Indication (GMTI) data sets were gathered and prepared for use by the development team to build advanced trackers. Methods to declassify data sets were investigated for use by the academic members of the consortium. These methods include traffic simulators and detection-derived data sets. - The sanitization effort created options for methods to “sanitize” an experimental dataset and reviewed the legal/security approvals required to make the data public releasable. - Hosted two Analysis workshops to focused on challenge problems, data, and metrics to define end to end assessment methodologies. ***FY 2012 Plans:*** - Develop top-down challenge problem for African theatre relevant to Moving Intelligence (MOVINT), Human Intelligence (HUMINT), and Open Source Intelligence (OSINT). Will drive development and analysis for new theatres that will be of interest to U.S. Africa Command, U.S. Central Command, and U.S. Special Operations Command. - Continue generating MOVINT data sources for the Development team. - Begin assembling an operational team centered on OSINT. Find representative data sets to capture these problems and generate a set of significant challenge problems for the Development team. - Continue to explore technical approaches, including investigating technical and legal challenges, for sanitizing data sets for use by non-U.S. citizens. ***FY 2013 Plans:*** - Continue generating MOVINT data sources for the Development team. - Continue generating challenge problems for the Development team. - Expand Challenge Problems to include Logistics Domain.			
Title: Assessment Initiative	1.359	1.439	4.807

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: The Assessment team is responsible for test and evaluation, as well as architectural analysis. The team is the primary vehicle by which algorithm developers test their data on sequestered data sets. The team provides feedback to the Developers and Operational team and guides future test vectors. This team is also responsible for architectural analysis of the processing and user interface layers. To this end, the team conducts quantitative analysis of algorithm performance requirements, and conducts user interface experiments in human factors. ***FY 2011 Accomplishments:*** - Built infrastructure to allow testing of tracking modules as a function of extended operating conditions. - Conducted early tests of infrastructure using experimental data. - Began joint program to experiment in 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. - Provide data analysis to evaluate tools and applications for temporal/spatial resolutions and space/time correlations for cueing, entity tracking, and data layering of disparate data sets into a single picture. This includes independent assessment and evaluation of tools and algorithms. - Bottom-Up architecture analysis for error propagation and Top-Down analysis for uncertainty management. ***FY 2013 Plans:*** - Continue assessment of MOVINT modules, provide extensive feedback to Operational Team on test results to guide FY 2013 collections. - Develop ground-truth data for text/imagery analysis relevant to challenge problem. - Extend Automated Online Data Repository (AODR) to wider development community by including additional datasets with analytic studies of tools/applications.			
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	1.540	1.631	5.448

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 Accomplishments:*** - Built and deployed a development platform for the Data-to-Decision Development consortium. - Populated the system with data and developed a user manual and process for developing test modules. - Implemented a version control and security system for consortium members to use in collaborating on track developments. - Conducted tests to assess architectural issues related to the cyber-infrastructure portion of this program. - Used tests to begin defining a multi-core architecture for the data management layer of Data-to-Decisions. ***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. ***FY 2013 Plans:*** - Continue experiments in scalability of algorithms and modules over large data sets. - Continue to develop roadmap for algorithm advancements in data management layer.			
Accomplishments/Planned Programs Subtotals	3.888	4.117	13.754

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• BA 2, PE# 0602663D8Z, P266: *Data-to-Decisions Applied Research*	0.000	4.128	13.753		13.753	13.796	18.677	18.680	19.021	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	10.847	10.406	-	-	-	-	-	-	-	Continuing	Continuing
P665: *Biometrics Science and Technology*	10.847	10.406	-	-	-	-	-	-	-	Continuing	Continuing

Note

This program is terminated in FY 2013 as part of DoD priorities and adjustments.

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 (DOD) warfighters and commanders with an important capability that supports such missions as base access, force protection, maritime intercept and counter-piracy operations, counterintelligence screening, humanitarian assistance, and displaced persons management. Additionally, the biometrics and identity information collected during DOD missions are shared with the Department of Homeland Security, the Department of State, and the Department of Justice, to support homeland defense, law enforcement, and other national interests.

In Oct 2006, the Deputy Secretary of Defense designated the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) as Principal Staff Assistant (PSA) for biometrics, followed in April 2011 with the designation of the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) as the PSA for forensics. The PSAs for biometrics and forensics have the responsibility to fully address and exercise control over all facets of the Department's biometrics and forensics programs, initiatives, and technologies. A central role of the Biometrics and Forensics Program is to support each respective PSA in addressing the technology gaps that preclude our ability to quickly and accurately identify anonymous individuals who threaten our interests and provide the ability to attribute enemy activity to a specific individual.

The Biometrics and Forensics Program develops an annual 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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	11.416	10.762	14.140	-	14.140
Current President's Budget	10.847	10.406	-	-	-
Total Adjustments	-0.569	-0.356	-14.140	-	-14.140
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.200	-			
• SBIR/STTR Transfer	-0.268	-0.284			
• Economic Assumptions	-0.058	-	-	-	-
• FFRDC	-0.040	-0.072	-	-	-
• Other Program Adjustments	-0.003	-	-14.140	-	-14.140

Change Summary Explanation

This program is terminated in FY 2013 as part of DoD priorities and adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P665: *Biometrics Science and Technology*	10.847	10.406	-	-	-	-	-	-	-	Continuing	Continuing

Note

This program is terminated in FY 2013.

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 (DOD) warfighters and commanders with an important capability that supports such missions as base access, force protection, maritime intercept and counter-piracy operations, counterintelligence screening, humanitarian assistance, and displaced persons management. Additionally, the biometrics and identity information collected during DOD missions are shared with the Department of Homeland Security, the Department of State, and the Department of Justice, to support homeland defense, law enforcement, and other national interests.

In Oct 2006, the Deputy Secretary of Defense designated the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) as Principal Staff Assistant (PSA) for biometrics, followed in April 2011 with the designation of the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) as the PSA for forensics. The PSAs for biometrics and forensics have the responsibility to fully address and exercise control over all facets of the Department's biometrics and forensics programs, initiatives, and technologies. A central role of the Biometrics and Forensics Program is to support each respective PSA in addressing the technology gaps that preclude our ability to quickly and accurately identify anonymous individuals who threaten our interests and provide the ability to attribute enemy activity to a specific individual.

The Biometrics and Forensics Program develops an annual 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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Biometric Information Technology Evaluation (BITE)	0.650	0.400	-
Description: BITE served as the focal point for assessing the DOD biometric and forensic capabilities. Building on previous work, BITE expanded the analysis of the effectiveness of the use of biometrics and forensics to include operations in Afghanistan. The project focused on four tasks to support the mission in Afghanistan: (1) identifying the location and/or mission that generated the most matches to the biometrically enabled watchlist; (2) developing a return on investment calculation framework for the use of			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
biometrics in Iraq and Afghanistan; (3) measuring the additional value provided by rolled fingerprints in support of latent matching; and (4) applying a metrics framework to DOD's Defense Forensic Enterprise. ***FY 2011 Accomplishments:*** The metrics framework for DOD's Defense Forensic Enterprise has been completed and transitioned to DOD. ***FY 2012 Plans:*** Initial analysis of the biometrically enabled watchlist will be delivered to DOD in 1Q FY 2012. BITE will further expand the research into identifying recommendations for improved employment of biometrics in support of force protection and the development of a metrics dashboard for the DOD Defense Forensic Enterprise.			
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 analytical tools to determine the affiliations of the monitored people. The payoff is to produce a system deployable at Forward Operating Bases (FOB) which 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 40 meters. In addition, two long range, manually controlled cameras are provided for extending facial recognition range to 100 meters. The outcome of this project is a stand-off force protection capability and operational test data to inform future investments. ***FY 2011 Accomplishments:*** The project conducted system testing, user manual writing, and user training. The systems were transitioned to the Marine Corps for deployment to five Forward Operating Bases in Afghanistan.	0.385	-	-
Title: Aptamer Selection and Integration in Nanoparticle-Based Detection Systems ***Description:*** This project discovered 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 were investigated at the Air Force Research Laboratory to convert this binding event into optical and electrical signals which allowed for implementation into a handheld sensor. The primary output of this project 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. This will enable the development of a handheld forensic device capable of detecting trace levels of particular chemicals.	-	0.180	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Project initiation occurred in 2010, and in 2011 the project developed a new discovery method for aptamers and functionalized various types of nanoparticles. ***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: Age of Latent Fingerprints for Tracking Suspects ***Description:*** This project investigated 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 2011 Accomplishments:*** The investigators evaluated DNA degradation from latent fingerprints. ***FY 2012 Plans:*** A final report evaluating the feasibility of this technique will be provided early in FY 2012. This report's findings and recommendations will be distributed throughout the DoD and Interagency DNA user communities, and will inform the intelligence community of the use of DNA aging to determine how recently a fingerprint of interest was left at a particular location, tying a person of interest to a particular place at a particular time. The information will also inform the tactics, techniques, and procedures used by DoD law enforcement to perform the same analysis when conducting traditional criminal investigations.	0.655	-	-
Title: Computational Iris Capture Camera Prototype and Demonstration ***Description:*** This project improved image quality in biometrics databases by reducing motion blur for handheld iris enrollments using a fluttering shutter technique. The flutter shutter technique has applications for both iris and facial imaging systems, especially when collection is performed at greater distances. The project delivered a prototype iris image capture camera incorporating fluttering shutter and coded capture with an associated user's guide and final report. ***FY 2011 Accomplishments:*** This project has demonstrated initial success with improving image quality and reducing motion blur, which is the main source of error when performing iris collection. These successful computational corrections techniques mitigate the need for expensive, bulky optics traditionally required for iris or face image collection at extended ranges, making collection devices more portable,	0.858	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
more capable, and cheaper. The project transitioned to the Army for operational testing and technology insertion into the Joint collection device program of record.			
Title: Non-Contact Biometric Hand Scanner ***Description:*** This project developed a non-contact, mobile hand print biometric capture system that is capable of capturing high quality three dimensional images of all five fingers and the palm in a single presentation. This effort delivered a robust prototype field operating unit and test reports. The result is a technology that supports a wide range of applications where a high through put of individuals is required. The primary output is improved force protection at DoD installations by making the process of fingerprint collection and identification faster and easier for the end user while avoiding long lines. ***FY 2011 Accomplishments:*** This project demonstrated a proof of concept for whole hand biometric image capture. The project has transitioned to the Army for operational testing and technology insertion into the Joint collection device program of record. Prototypes and research has been provided to the Department of Homeland Security.	0.835	-	-
Title: Improving Iris Recognition Matching of Off-Angle and Dilated Non-Ideal Data ***Description:*** Accurately capturing iris biometric data at other than direct facial angles is a challenge. This project researched an approach to improve performance in segmenting and matching iris data captured at angles greater than 20 degrees off-angle. As part of this effort, the investigator delivered image processing and pattern recognition algorithms to improve the performance of iris recognition in the presence of refractive distortion and/or dilation. ***FY 2011 Accomplishments:*** This project modeled the human eye for testing and evaluated the image processing and pattern recognition algorithms, and is complimentary with the Handheld Unconstrained Iris Camera project (below). These models and the accompanying algorithms better enable the collection of iris images in non-ideal situations where the subject is not looking directly into the camera. The technology is a key enabler to nearly all the use cases for iris recognition, including force protection, person of interest identification, and media exploitation. The project has transitioned to the Army for operational testing and technology insertion into the Joint collection device program of record.	0.865	-	-
Title: Handheld Unconstrained Iris Camera ***Description:*** This project addressed 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. This effort resulted in the development of a hand-held iris camera with design documentation and an evaluation report for the device. ***FY 2011 Accomplishments:***	0.900	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
This project developed image processing and pattern recognition algorithms to improve the performance of iris recognition at off-angles and while the subjects were moving, and is complimentary with the Improving Iris Recognition Matching of Off-Angle and Dilated Non-Ideal Data project (above). These collection and processing techniques better enable the collection of iris images in real-world environments where the collection is performed in bright sunlight or the subject is not looking directly into the camera. The technology is a key enabler to nearly all the use cases for iris recognition, including force protection, person of interest identification, and media exploitation. The project has transitioned to the Army for operational testing and technology insertion into the Joint collection device program of record.			
Title: Biometric Scientific Research Assessment ***Description:*** This is a two-phase project to improve the underlying confidence in biometrics. Phase I identified and assessed biometric related academic research as it pertains to the National Academies of Science report on "Biometric Recognition: Challenges and Opportunities" and DOD. 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. This effort provided a catalog of existing research and a final report that identified opportunities for investment in future research. ***FY 2011 Accomplishments:*** This project developed a comprehensive catalog of existing biometric research published by academia. The assessment identified biometric research already performed by academia. The project has transitioned to the Army and to Interagency partners to inform the ongoing development of biometric technology roadmaps. ***FY 2012 Plans:*** The second phase will conduct the necessary research identified in Phase I to improve the underlying confidence in biometric technology.	0.275	0.100	-
Title: Portable Low Temperature Plasma Miniature Mass Spectrometer (LTP Mini-MS) ***Description:*** This project developed a hand-portable mass spectrometer device for the detection of explosives, chemical weapons agents, illegal drugs, 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 and costs 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. This effort delivered four miniature mass spectrometer systems and provided documentation and performance information. The primary output of this effort is a system that enables operators the ability to quickly determine whether suspect chemicals are derogatory or not and take appropriate actions. Such actions could include performing tactical questioning of the person in possession of the derogatory chemicals, in order to gain sufficient tactical information to conduct follow-on military actions against other members of the same network.	0.665	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: This project developed the specified prototypes and transitioned to the Army for operational testing and evaluation.			
Title: Stokes Image Sensor for Non-Invasive and Rapid Latent Fingerprint Detection ***Description:*** This project developed a portable system that can rapidly capture a latent fingerprint without disturbing the site. This system uses an optical technique to image latent prints using spatially resolved polarization phase shifts of a probe laser. This is a two-phase effort that includes a proof-of-principle experiment followed by the development of an operational prototype. The primary output of this effort is the ability to collect latent prints without traditional powders. This latent print capability enables investigators to identify an individual frequenting a particular location, without alerting the individual to DoD's ongoing investigation by leaving powder residue at the scene. ***FY 2011 Accomplishments:*** The first phase developed a test bed and executed proof of principle tests to demonstrate the Stokes Image Sensor capabilities. ***FY 2012 Plans:*** The second phase will develop and deliver a prototype of the portable Stokes Image Sensor.	0.510	0.237	-
Title: Detection and Imaging of Undeveloped Latent Fingerprints ***Description:*** This project researched the appropriate technique (optical, chemical, and thermal imaging) for locating and capturing latent fingerprints on a variety of surfaces. This enabled forensics labs to more efficiently detect and capture undeveloped latent fingerprints on a range of objects. This effort provided research and a final report on the performance of the various investigated imaging techniques with appropriate recommendations for use and further development. The primary output of this effort is a more informed biometric and forensic capability and improved techniques for identifying latent fingerprints on a variety of surfaces. The information informs the tactics, techniques, and procedures used by DoD to analyze IED components and weapon caches, or to exploit sensitive sites and conduct criminal investigations. ***FY 2011 Accomplishments:*** This project developed an imaging system and the test protocol for locating and capturing latent prints, and provided a report on their efficacies. The project transitioned to the Army for operational testing and evaluation.	0.650	-	-
Title: Speckle Imaging for Fingerprint Technology ***Description:*** This project is researching the use of an optical dual-wavelength speckle imaging technique to capture fingerprints. The Speckle Imaging for Fingerprint Technology (SIFT) enhances ridge details in fingerprints by optically sensing periodic variations in the surface slope in the neighborhood of ridges. SIFT leverages a low-power, eye safe laser beam to scan the finger and detect the ridges. The innovative use of a laser allows for contactless capture of the fingerprint as opposed to traditional	0.550	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
fingerprint sensors, which must be in contact with the finger. The outcome of this effort will provide a proof-of-concept for 10 meter stand-off fingerprint capture. Non-contact fingerprint scanning technology will improve force protection at DoD installations by making the process of fingerprint collection and identification faster and easier for the end user while avoiding long lines. ***FY 2011 Accomplishments:*** System development of the prototype device was initiated. ***FY 2012 Plans:*** The project will be transitioned to the Army for operational testing and technology insertion into the Joint collection device program of record, and prototypes and research will be provided to the Department of Homeland Security to inform development of their collection device program			
Title: Biometrics Automated Toolset – Army (BAT-A) Handheld Testing ***Description:*** This project funded the test and evaluation of the proposed biometric tactical collection handheld device for the BAT-A Refresh and Sustainment effort. This testing evaluated the handheld's performance while under adverse weather conditions and various environmental conditions. The evaluation examined the device's ability to accurately match an individual's identity against thousands of subjects in the onboard device database using only fingerprints and iris scans, and record the speed with which those matches are achieved. This effort produced a test and evaluation report for the given biometric device. ***FY 2011 Accomplishments:*** This project tested the proposed device and a final test and evaluation report has been delivered to the Project Manager, DOD Biometrics. The device has since been successfully deployed to the Afghanistan theater of operations and resulted in the identification and detention of several top-tier terrorists.	0.450	-	-
Title: Forensic Science Validation of Latent Fingerprint Analysis ***Description:*** This project examined the scientific basis of latent fingerprint validation techniques through a rigorous examination of the latent fingerprint analysis process. The payoff is a statistical assessment of the latent fingerprint process, resulting in improved forensic analysis methodologies. The effort also produced a roadmap for future forensic validation studies. The primary output of this effort is recommendations that inform the development of improved procedures and requirements for latent fingerprint examiners, increasing the accuracy and performance of the US Government's biometric and forensic enterprises in many areas including force protection, homeland defense, and criminal justice. ***FY 2011 Accomplishments:***	0.550	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
This project conducted a review of prior latent fingerprint analysis methods and an evaluation of latent fingerprint match reliability. The report's findings and recommendations have been distributed throughout the DoD and Interagency forensic user communities, informing the biometric and forensic enterprises on the reliability of latent print matching.			
Title: Automated Liquid Handling for DNA Processing ***Description:*** This project evaluated, selected, and internally validated an automated liquid handling system and sample tracking software capability. This technology is being used for casework applications within DOD DNA labs and has the potential to save 1,800 man-hours annually, while also improving test reliability by reducing the possibility of human error during sample preparation and processing. This effort produced an assessment and recommendation for implementing two systems for automated DNA handling. The outcome of this project is technology that should save 1,800 man-hours annually at each location the technology is implemented, while also improving test reliability by reducing the possibility of human error during sample preparation and processing. ***FY 2011 Accomplishments:*** This project completed the initial assessment of the effort and delivered a written recommendation to facilitate automated DNA handling. This project has been transitioned to the Army for implementation.	0.427	-	-
Title: Management of Digital Identities ***Description:*** The purpose of this project was to examine the DOD role in managing digital identities for security screening and access control, and to understand how these DOD missions will integrate into a larger federated US Government strategy. This effort produced a prioritized gap analysis of digital identity processes within DOD with associated recommendations and courses of action for implementing a digital strategy within DOD. The outcome of this study is recommendations that inform the development of DoD policy and implementation plans, and reflect legal, regulatory, cultural and civil liberty issues that affect the use of DoD identity information across the interagency. The policies resulting from this project enable DoD to more efficiently execute key missions such as force protection, access control, and identification of terrorists. ***FY 2011 Accomplishments:*** This project completed the initial assessment of gaps associated with the establishment of digital identities within DOD.	0.347	-	-
Title: Biometric and Forensic Information Services Model-Based Systems Engineering ***Description:*** This project provided enterprise and solutions-level Model-Based Systems Engineering (MBSE) and architecture development, collaboration, and review support. Solutions that were developed were assessed for impact to current operations and selected investment strategies to address identified mission gaps. This effort produced appropriate scenarios and concepts of operation for the various enterprise and solutions-level MBSE analysis.	0.375	1.100	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: This project completed the initial assessment of biometric and forensic architectures. The DoD Biometric and Forensic Information Services resulting from this effort provide the warfighter rapid identity and forensic analytical products/results in a format that supports decision-making and mission execution. These benefits increase substantially as the architecture matures from integrated, to executable, to actionable. ***FY 2012 Plans:*** The MBSE effort will evaluate the enterprise architectures at the solutions level and provide recommendations for future technology implementations to support the warfighter.			
Title: Forensic Analysis Imaging Tool (FASIT) ***Description:*** This project will develop a technology to rapidly locate trace forensic evidence and areas of interest within battlefield environments using specific wavelength bands of light. ***FY 2012 Plans:*** The project will provide two prototype systems for use in expeditionary lab environments with associated technical and training manuals.	-	0.400	-
Title: Single-use Sensor Strips for Reliable Field Analysis of Gunshot Residues ***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. Improved gunshot residue detection techniques will enable more confidence in the identification of malign agents, and reduce the number of inconclusive results encountered with existing gunshot residue tests. ***FY 2012 Plans:*** This project will develop a hand-held prototype device, using disposable sensor strips, for gunshot residue field detection with appropriate software and documentation.	-	0.200	-
Title: FY 2012 Fingerprint Sensor Development ***Description:*** DOD has a requirement for a smaller, lighter, and more resilient tactical biometric collection device. The size of current optical fingerprint sensors limits today's tactical biometric collection devices. There is a need for a non-optical fingerprint collection technology that meets the smaller, lighter, and more resilient requirement for the warfighter. This project will identify	0.550	0.800	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
novel technologies that can advance non-optical fingerprint collection, and will be funded and managed jointly with the Department of Homeland Security. ***FY 2011 Accomplishments:*** The effort was kicked-off with an initial assessment of innovative research in fingerprint collection devices. The assessment led to the development of a prototype to capture flat fingerprints in a smaller, lighter, more resilient form factor. ***FY 2012 Plans:*** The project will explore the use of novel technologies for fingerprint collection in austere environments and include test and evaluation events to support technology transition.			
Title: FY 2012 Biometric Algorithm Development ***Description:*** The Biometrics Enterprise requires efficient use of processing, cataloging, storing, and matching of biometric data. A common challenge across the enterprise is the use of commercial algorithms for segmentation, quality assessment, and matching. As the amount of biometric data collected by DOD increases, the cost for using commercial algorithms rises significantly. This project will explore the feasibility and return on investment for developing and maintaining government owned algorithms for DOD, which would also be useable by interagency partners. ***FY 2012 Plans:*** This project will examine existing government owned biometric algorithms and develop a recommendation for using government owned verses commercially available algorithms. This project will investigate algorithms developed and maintained throughout the interagency.	-	0.700	-
Title: FY 2012 Biometric Testing and Evaluation ***Description:*** This effort will support the development of a standard data set for testing biometric technologies. In addition, this project will leverage the standard data set to assess biometric 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. This project will be funded and managed jointly with the National Institute of Justice. ***FY 2012 Plans:*** This project will produce a standard test data set that can be leveraged by DOD and interagency partners for test and evaluation purposes. The FY 2012 project will focus on fingerprint capture and will leverage existing efforts within the interagency. In addition, this project will provide test results and a report with recommendations and a suggested path forward.	-	0.900	-
Title: Battlefield Automated DNA Analysis and Sampling System	-	0.300	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: This project will develop a portable system that enables rapid, fully automated DNA sample preparation and analysis in the field. The proposed architecture employs a novel droplet-based digital microfluidic (DMF) platform as a hub interfacing both intermittent and continuous-flow microchannel-based fluidic modules. This technology is a key component in the development of miniaturized equipment for DNA analysis, and also supports the development of a range of other miniaturized assay equipment. ***FY 2012 Plans:*** This project will deliver a self-contained DNA extraction/isolation module and the preliminary design for a cubic foot-sized, field-deployable system ruggedized to operate in non-laboratory environments and capable of automated sample operation.			
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 a technology to process DNA using alternative microfluidic technologies as well as training on existing and future DNA sampling techniques. ***FY 2012 Plans:*** This project will deliver a low rate production prototype to be tested and evaluated by the warfigther. The project is improving on existing research with the goal to process a DNA sample in less than 60 minutes.	-	0.400	-
Title: FY 2012 Biometric Broad Agency Announcement ***Description:*** As biometrics matures within DOD, the requirements and needs of the user are becoming increasingly complex and require specific solutions that have not been developed. Innovative solutions from academia and industry are required to advance the state-of-the-art of biometric capabilities and meet these warfighter needs. This project will leverage an open solicitation to identify novel technologies that can advance biometric science within DOD and transition to the warfighter. ***FY 2012 Plans:*** The project will explore the use of novel technologies to conduct existing biometrically enabled missions in new ways or to exploit materials that are currently not examined.	-	1.744	-
Title: FY 2012 Expeditionary Forensic Broad Agency Announcement ***Description:*** There is a requirement from the warfighter and commander to support the development of innovative technologies that will provide an emerging expeditionary forensic capability. This project will leverage an open solicitation to identify novel technologies that can advance forensic science within DOD and transition to the warfighter. ***FY 2011 Accomplishments:***	0.350	1.100	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
The effort has kicked-off with initial research and advertisement of a solicitation to identify new and emerging research in the areas of DNA, latent fingerprints, firearms and toolmarks, trace evidence, explosive detection, and drug chemistry. ***FY 2012 Plans:*** The project will explore the use of novel technologies to conduct existing forensic examinations in new ways or to exploit materials that are currently not examined. For existing forensic examinations, it will explore new technologies that reduce processing times or increases sensitivities by an order of magnitude.			
Title: FY 2012 Forensic Science Validation ***Description:*** The National Academies of Science report on "Strengthening Forensic Science in the United States: A Path Forward" calls for the need to strengthen the scientific basis for several forensic science disciplines to include latent fingerprint and tool mark analysis. DOD leverages several forensic science disciplines for law enforcement and battlefield forensics. More rigorous study of forensic science disciplines is required within DOD. ***FY 2012 Plans:*** This effort will consist of a scientific study to determine probabilistic measures for evaluating match results from multiple forensic science disciplines to include tool mark analysis.	-	1.045	-
Title: FY 2012 Forensic Technical Evaluation ***Description:*** This effort will assess 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 2012 Plans:*** This project will produce test results and a report that provides recommendations and a suggested path forward for the forensic technology being evaluated.	-	0.800	-
Accomplishments/Planned Programs Subtotals	10.847	10.406	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

E. Performance Metrics

Defense Biometrics and Forensics 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 2011, eight projects were completed with prototype or final product delivery. Six projects were focused on biometrics and transitioned to the Army as the Executive Agent for Biometrics. Two of the projects were focused on forensics and were transitioned to the Army as the Executive Agent for Forensics. Additional development will be required for these prototypes prior to selection for production. The Biometrics transition rate of 100% for FY 2011 exceeds the 30% benchmark established by DOD Strategic Objective 4-2D.

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603668D8Z: *Cyber Advanced Technology Development*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	4.847	5.539	19.935	-	19.935	19.995	29.707	30.783	31.342	Continuing	Continuing
P113: *Cyber Advanced Technology Development*	4.847	5.539	19.935	-	19.935	19.995	29.707	30.783	31.342	Continuing	Continuing

A. Mission Description and Budget Item Justification

Our military forces require resilient, reliable networks and computer systems 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 focuses on innovative and sustained research in both cyber security and computer network operations to develop new concepts to harden key network and computer components, design new resilient cyber infrastructures, 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 for agile cyber operations and mission assurance.

The Cyber 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 Advanced Technology Development program will build on results of matured applied research from the Cyber Applied Research (0603668D8Z) and other programs to develop technology demonstrations for potential transition into capabilities that support the full spectrum of computer network operations. These approaches will include moving from cyber defense to cyber resilience by changing the defensive terrain of our existing digital infrastructure, identifying ways to raise the risk and lower the value of attack from an advanced, persistent cyber threat, and focusing on mission assurance.

This program focuses on integrating computer network defense and computer network operations, addressing the advanced persistent threat, and filling DoD technology gaps as determined by assessments conducted by the Office of the Assistant Secretary of Defense for Research & Engineering (OASD(R&E)) over the past year.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense					DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*			R-1 ITEM NOMENCLATURE PE 0603668D8Z: *Cyber Advanced Technology Development*		
B. Program Change Summary ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	10.000	10.709	20.496	-	20.496
Current President's Budget	4.847	5.539	19.935	-	19.935
Total Adjustments	-5.153	-5.170	-0.561	-	-0.561
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.108	-0.132			
• Congressional Adjustments	-5.000	-5.000	-	-	-
• Economic Assumptions	-0.025	-	-	-	-
• FFRDC	-0.018	-0.038	-	-	-
• Other Program Adjustments	-0.002	-	-0.561	-	-0.561

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603668D8Z: *Cyber Advanced Technology Development*	PROJECT P113: *Cyber Advanced Technology Development*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P113: *Cyber Advanced Technology Development*	4.847	5.539	19.935	-	19.935	19.995	29.707	30.783	31.342	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 AND COMPUTER NETWORK DEFENSE (IA/CND):
Develop technologies to harden DoD network components; evolve from network defense to mission assurance; and enable systems to operate through cyber attacks in degraded and contested 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 METRICS AND EXPERIMENTATION:
Explore new analytical methodologies, models, and experimental data sets to establish metrics to measure a system's state of security, 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 and repeatable results, and quantitative experimentation and assessment of new cyber technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Cyber Advanced Technology Development	4.847	5.539	19.935
Description: The Cyber Advanced Technology Development program will build on, mature, and transition the results of successful applied research results from the Cyber Applied Research program element. The link between the Cyber Applied Research and Cyber 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. This program focuses on integrating computer network defense and computer network operations, addressing joint problems in cyber operations, and filling capability and technology gaps as determined by assessments in the Office of the Assistant Secretary of Defense for Research & Engineering. Progress and results are reviewed by the DoD Cyber S&T Steering Council.			
FY 2011 Accomplishments: Initiated S&T for technology development with the specific focuses technical areas of information assurance and computer network defense, computer network operations, and cyber metrics and experimentation. Commenced a semi-annual technical			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603668D8Z: *Cyber Advanced Technology Development*	PROJECT P113: *Cyber Advanced Technology Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
program review cycle and a series of laboratory-hosted cross-fertilization workshops to enable joint collaboration across DoD S&T organizations and between the defensive and offensive S&T communities. Focuses of each technical area: INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND): -Resilient architectures and protocols to reduce cyber reaction time for rapid system reconstitution to a known secure state and enable critical mission operation through cyber attacks in degraded environments. -Agile cyber operations to enable moving target defense and defensive cyber maneuver. -Attack detection and understanding to reduce, rapidly and autonomously detect, and mitigate attack effects. -Vulnerability discovery and analysis to improve cyber risk assessment, situational awareness, and the impact of cyber assets on missions. COMPUTER NETWORK OPERATIONS (CNO): -Resilient CNO frameworks and architectures. -Wireless discovery and access techniques. -Situational awareness in near real-time during cyber operations. -Agile cyber maneuver to disrupt and confuse adversarial attack planning cycles to increase adversary risk and work factor and decrease effectiveness during adversary attack and exploitation attempts. -Improved understanding of the adversarial threat. CYBER METRICS AND EXPERIMENTATION: -Measurements of effectiveness of existing countermeasures and the current level of DoD cyber security. -Measurements of impacts of new cyber security technologies. -Measurements of computer and network assurance levels for enhanced situational awareness. -Quantitative analysis and experimental testing of the effect of resilient and agile cyber operations and architectures on DoD system and network security.			
FY 2012 Plans: INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND): -Enable interoperability amongst computer network defense and computer network attack software framework capabilities for broader threat mitigation coverage. -Analysis of protocols for tactical assured information sharing solutions and assessment of embedded or stand-alone solutions.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603668D8Z: *Cyber Advanced Technology Development*	PROJECT P113: *Cyber Advanced Technology Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
-Develop automated reverse engineering framework that discovers and analyzes software and system vulnerabilities and targets multiple processor architectures through a plug-in application programming interface. -Perform a security analysis of COTS components (e.g. CPU, chipsets, RAM, BIOS, hard disks, peripheral cards) to identify supply chain vulnerabilities unaddressed in current DoD software protection and anti-tamper systems. -Develop real-time data collection techniques and active deception techniques to specifically target and engage humans behind attacks rather than attack attributes to advance determinations of adversaries' behavioral characteristics. -Demonstrate prototype system that evaluates a host's integrity at startup by checking and measuring a modern PC's runtime operations. COMPUTER NETWORK OPERATIONS (CNO): -Research application programming interfaces to extract data from cyber operations platforms for more effective data fusion and situational awareness. -Development of common protocols and services to enable a common command and control infrastructure and more efficient effects development to enhance existing but disparate computer network operations software frameworks. -Develop techniques to use collaborative analysis, scalable tools, and extendable generic processor models to reduce static and dynamic software analysis time from weeks to hours. -Develop and test a time difference of arrival system for tactical wireless emitter localization. -Improve attack detection techniques for operating system-independent attacks, included stealthy kernel, hypervisor, and firmware rootkits. CYBER METRICS AND EXPERIMENTATION: -Demonstrate automatic experiment configuration tools, automatic correlation capabilities, and situational awareness capabilities in a cyber R&D experimentation environment.			
FY 2013 Plans: INFORMATION ASSURANCE AND COMPUTER NETWORK DEFENSE (IA/CND): -Design security architecture and trusted execution flow framework for tactical assured information sharing and validate proof of concept. -Evaluate automated reverse engineering framework through red-team testing. -Develop non-invasive hardware Trojan prevention and detection using firmware programming countermeasures and side channel analysis to mitigate firmware-based and hardware-based attacks. -Develop countermeasures to adversarial deception tactics of concealment, decoys, diversion, and emulation. -Develop game-theoretic based algorithms to predict cyber attacks using machine learning and new trusted sensing capabilities.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603668D8Z: *Cyber Advanced Technology Development*	PROJECT P113: *Cyber Advanced Technology Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
-Develop insider threat attack detection techniques by monitoring and certifying known legitimate end-node behavior and detecting abnormalities in real-time. COMPUTER NETWORK OPERATIONS (CNO): -Enhance cyber operations platform with implementation of newly developed application programming interface and demonstrate unimpeded data access across multiple platforms and operators in near-real time. -Develop graded-response mechanisms based on real-time threat assessment of operating system-independent attacks, included stealthy kernel, hypervisor, and firmware rootkits. -Decouple programming language-dependent constructs in existing CNO software frameworks to allow for development of clients developed in different languages to operate within the SW architecture. -Investigate and test a hybrid time of arrival and phased array system for wireless localization. CYBER METRICS AND EXPERIMENTATION: -Design practical information operations metrics for assessment of classified technologies on a cyber R&D experimentation environment.			
Accomplishments/Planned Programs Subtotals	4.847	5.539	19.935

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• BA 2, PE # 0602668D8Z, P003: *Cyber Applied Research*	4.538	4.581	18.985		18.985	19.041	9.581	9.851	10.030	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	10.299	12.724	8.235	-	8.235	8.398	8.606	8.853	9.016	Continuing	Continuing
P370: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*	10.299	12.724	8.235	-	8.235	8.398	8.606	8.853	9.016	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. The Program exists to optimize U.S. forces' ability to perform population-centric sensing, understand behaviors driven by social and cultural variables, and take effective courses of action in the full range of military operations. Program research enhances intelligence, surveillance, and reconnaissance (ISR) capabilities for understanding the Irregular Warfare environment and meeting the challenges of instability and violent extremism. Under three integrated program elements (PEs), the Program conducts applied research, matures and demonstrates advanced technology, and develops transition-ready components and prototypes. Work under PE 0603670D8Z is focused on developing and demonstrating general-use, cross-domain tools in two areas: computational modeling; and sociocultural behavior data collection, management, and dissemination. Research results in more effective cultural understanding in existing intelligence, influence operations, and operations planning systems; modeling capabilities for forecasting reactions to U.S./coalition actions; demonstration of strategic decision making tools that highlight political, religious, cultural, and related factors; tools and technologies enabling more widespread and effective use of sociocultural behavior models in operations and mission rehearsal; and toolsets that can be used as strategic decision making tools to account for sociocultural factors.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	11.510	18.179	20.743	-	20.743
Current President's Budget	10.299	12.724	8.235	-	8.235
Total Adjustments	-1.211	-5.455	-12.508	-	-12.508
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.112	-			
• SBIR/STTR Transfer	-0.230	-0.367			
• Congressional Adjustments	-1.000	-5.000	-	-	-
• Economic Assumptions	-0.053	-	-	-	-
• FFRDC	-0.037	-0.088	-	-	-
• Other Program Adjustments	-0.003	-	-12.508	-	-12.508

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P370: *Human Social Culture Behavior (HSCB) Modeling Advanced Development*	10.299	12.724	8.235	-	8.235	8.398	8.606	8.853	9.016	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program is focused on developing and demonstrating general-use, cross-domain tools in two areas: computational modeling; and sociocultural behavior data collection, management, and dissemination. Research results in cultural understanding technologies and overlays to support intelligence, influence operations, and operations planning systems; modeling capabilities for forecasting reactions to U.S./coalition actions; demonstration of strategic monitoring and decision making tools that account for political, religious, cultural, and related factors; tools and technologies enabling more widespread and effective use of sociocultural behavior models in operations. The Program ensures that supported research is clearly tied to warfighters and their needs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Modeling Capabilities	3.605	6.335	6.004

Description: Develop and demonstrate computational models to support population-centric sensing of reactions to U.S./coalition informational, military, economic, or political actions. The Program's long-term objective is to develop tools that can enable forecasting of those reactions and support analysis of alternative courses of action (COA). This is a challenging objective that requires research, development and integration of constituent technologies. 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. Support specific operational planning tasks for selected government partners via limited technical demonstration in user settings. In addition, working with operational partners HSCB Program models will be tested in realistic environments by representative users.

FY 2011 Accomplishments:

Transitioned to USAFRICOM J2 a geospatial model to inform decision makers about activity of terrorist organizations in Africa. Transitioned to USSOCOM (J2) technologies and materials for analytic tools that incorporate sociocultural information and data search and tagging technology. In support of International Security Assistance Force (ISAF) Networks Effects Cell (NEC), applied and transitioned a methodology for defining precursors to adversarial events and strengthens capability for forecasting potential hostile actions. Transitioned select capabilities into DCGS-A common format to support transition.

FY 2012 Plans:

Continue research and demonstration of integrated decision making support tools, with particular focus on hybrid modeling that can support development of COAs for countering violent extremism and mitigating instability. Research and develop components

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
to demonstrate a prototype "social radar" application suite. Demonstrate hybrid technologies that can reduce human analytic time and increase quality of analysis of large scale human movements in potentially unstable regions. Enhance models that provide capabilities to detect and forecast instability for 175 countries. Provide prototype sentiment analysis capability and tools that incorporate social media with traditional data sources. ***FY 2013 Plans:*** Continue to extend and assess system for providing advance sensing of national and sub-national scale crisis. Mature "social radar" application suite. Demonstrate tools for understanding COA impacts on nature and extent of violent extremism. Introduce forecasting capabilities for new indicators of national security interest. Develop methods, techniques, standards and tools that support model selection and verification and validation.			
Title: Visualization Software Toolsets ***Description:*** Demonstrate first generation decision-making tools that include sociocultural behavior factors. 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 Diplomatic, Information, Military and Economic (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. This Program will focus on providing visualization capabilities that support a richer understanding of sociocultural data in concert with other warfighter data. ***FY 2011 Accomplishments:*** For USSOCOM, transitioned tools and technology to support the Military Information Support Operations (MISO) planning process, including visualizations and modeling of information operations. In support of U.S. European Command and U.S. Africa Command, transitioned model and analytic methods for forecasting migration patterns. Provided framework within which to collect and visualize data in near real-time, analyze them in a relevant data-to-decisions process resulting in actionable information, and disseminate the outputs using standard data interoperability protocols. ***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 sociocultural behavior dynamics. ***FY 2013 Plans:*** Visualization research discontinued starting FY 2013.	2.575	2.691	-
Title: Training/Mission Rehearsal Systems	2.060	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: Develop and demonstrate methods and procedures for integrating cultural information into military operations. Focus on methods and resources that will increase flexibility to rapidly deliver just-in-time training for new regions of interest and emerging mission areas (e.g. transition and reconstruction). Develop resources and tools to support integration of sociocultural behavior models with existing training systems, and to train personnel at tactical, operational, and strategic levels in the appropriate and effective use of those models. ***FY 2011 Accomplishments:*** Implemented culturally-aware conversational agents by linking agent behavior to an ontology. Defined specific communication tasks indexed to a range of warfighter missions, roles, and tasks, and began development of Two Dimensional (2D), Three Dimensional (3D), and mobile learning activities to train these communication skills. ***FY 2012 Plans:*** Training research discontinued starting FY 2012.			
Title: Sociocultural Data Collection and Management ***Description:*** Develop and demonstrate tools for improved collection of sociocultural behavior data for multiple operational echelons and denied areas. 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. Specifically address social media and other open source data. ***FY 2011 Accomplishments:*** Developed and applied semantic wiki capability to document data produced as part of analysis for multiple ISAF NEC requests for information and in support of USMC Civil Affairs requirements for information management. Provided operational demonstration of a capability that enables rapid population of a social network for review by an analyst. ***FY 2012 Plans:*** Research and develop tools for collecting valid sociocultural data in denied or restricted environments. Demonstrate methods and tools for collecting at scale from open sources data that support understanding and COA assessment for the challenges of violent extremism and regional instability. ***FY 2013 Plans:***	2.059	3.698	2.231

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Demonstrate tools for data collection in denied or restricted environments. Limited investment to advance tools and methods for harvesting data at scale from open source media. Discontinue research and development of other technology enablers for monitoring and understanding the human environment without “boots on the ground”.			
Accomplishments/Planned Programs Subtotals	10.299	12.724	8.235

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• PE 0602670D8Z BA 2: *HSCB Applied Research*	7.199	8.602	6.771		6.771	6.923	7.100	7.305	7.438	Continuing	Continuing
• PE 0604670D8Z BA 4 : *HSCB Research & Engineering*	7.038	7.252	5.131		5.131	5.234	5.355	5.522	5.622	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	41.388	46.277	21.966	-	21.966	22.407	22.913	23.610	23.963	Continuing	Continuing
P680: *Manufacturing Science and Technology Program*	41.388	46.277	21.966	-	21.966	22.407	22.913	23.610	23.963	Continuing	Continuing

A. Mission Description and Budget Item Justification

Defense-wide Manufacturing Science and Technology (DMS&T), established within the Manufacturing Technology Program directed in Title 10 USC Section 2521, 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. The mission to anticipate and close gaps in defense manufacturing capabilities and drive significant system life cycle affordability benefits makes DMS&T an increasingly important leveraging tool in the current budget environment.

DMS&T will: 1) address manufacturing enterprise game-changing initiatives that are beyond the scope of any one Military Department or Defense Agency 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 DMS&T program is fundamental to a coordinated development process. Concurrent development of manufacturing processes with the S&T development enables the use of emerging technologies. Key technical areas for investment for DMS&T include Advanced Electronics and Optics Manufacturing, Advanced Materials Manufacturing, and Enterprise and Emerging Manufacturing. Advanced Electronics and Optics addresses advanced manufacturing technologies for a wide range of applications such as sensors, radars, power generation, switches, and optics for defense applications. Advanced Materials addresses advanced manufacturing technologies for a wide range of materials such as composites, metals, ceramics, nanomaterials, metamaterials, and low observables. Enterprise and Emerging Manufacturing addresses advanced manufacturing technologies and enterprise business practices for defense applications. Key focus areas include the industrial information infrastructure, advanced design/qualification/cost tools, supply network integration technologies and management practices, direct digital (or additive) manufacturing, machining; robotics, assembly, and joining.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	18.916	17.888	22.234	-	22.234
Current President's Budget	41.388	46.277	21.966	-	21.966
Total Adjustments	22.472	28.389	-0.268	-	-0.268
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-0.375	-0.320			
• Congressional Adds	-	30.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.147	-1.291			
• Congressional add: Industrial Base Innovation Fund	24.000	-	-	-	-
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-	-	-
• Defense Efficiency - Contractor Staff Support	-	-	-	-	-
• Economic Adjustments and Other	-0.006	-	0.177	-	0.177
• -10% FY 2013-2017	-	-	-0.445	-	-0.445

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2011	FY 2012
Project: P680: *Manufacturing Science and Technology Program*		
Congressional Add: *Industrial Base Innovation Fund*	23.878	30.000
Congressional Add Subtotals for Project: P680	23.878	30.000
Congressional Add Totals for all Projects	23.878	30.000

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 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.

-10% FY 2013-2017

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P680: *Manufacturing Science and Technology Program*	41.388	46.277	21.966	-	21.966	22.407	22.913	23.610	23.963	Continuing	Continuing

A. Mission Description and Budget Item Justification

The DMS&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 are 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, and Office of Secretary of Defense (OSD). The call is 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 are 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 Broad Agency Announcements to industry. Priority is given to investments that support affordability and producibility of critical enabling manufacturing technologies that cut across multiple platforms. Investments 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, considering input from the JDMTP and Director of Manufacturing, and as approved by Deputy Assistant Secretary of Defense, Manufacturing and Industrial Base Policy (MIBP). Technology initiatives and projects are executed at the Component level.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Advanced Body Armor	2.145	1.149	1.588
Description: Advanced Materials Manufacturing: 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% - 15% while improving ballistic performance and flexibility. Cost will be reduced 5% - 10% and cycle time will be reduced by 10X-20X. 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) Dissimilar Material Assembly Technology to integrate ceramic, polymer adhesives, composites, and other organic and inorganic constituents into a unified body armor system. 2) Co-consolidation processing, to reduce cost and cycle time for the production			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
of composite material enabling 10% lighter armor while maintaining ballistic performance. 3) Multi-scale modification of ballistic ceramics and associated processes, which will include new additive processes and metallic substrates to improve ballistic integrity and manage adverse shock events due to ballistic impact. ***FY 2011 Accomplishments:*** Began the optimization of process parameters and developed next-generation tooling. Planned integration of materials and manufacturing processes into systems for the targeted applications. Processed three nanocomposite batches and evaluated properties. ***FY 2012 Plans:*** Conduct ballistic testing, integrate the most successful technologies, and scale-up to low rate initial production (LRIP) capacity. ***FY 2013 Plans:*** Conduct interlayer materials bonding and assembly. Develop evaluation parameters and complete ballistic and related testing. Process down select and integration. Enable LRIP process development.			
Title: Advanced RF Packaging ***Description:*** Advanced Electronics Manufacturing: This effort will apply an existing radar system already in production to satisfy a low-cost, open-architecture radar requirement 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. 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 (a total of $51M). Manufacturing technology improvements will have a direct impact on the rate and quantity of this capability delivered to current operations. 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. The system will use fiber optics to enhance radar performance, resulting in faster antenna rotation rates (enabling more exposure of targets) and greater flexibility in location of below-desks equipment (allowing a lower center of gravity and thus improved ship stability). ***FY 2011 Accomplishments:*** Yield performance of higher levels of integration for the LRU were evaluated. Focus was on the radar's open architecture and low cost manufacturing and assembly processes. Initiated development of a Model Based Enterprise (MBE) consisting of integrated "smart models" to ensure supportability and technology refresh. Continued the systems requirements definition phase. ***FY 2012 Plans:***	1.444	2.992	2.381

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Initiate development of a Model Based Enterprise (MBE) consisting of integrated "smart models" to ensure supportability and technology refresh. Continuing the systems requirements definition phase. At the conclusion of the requirements review, conduct land-based integration and testing of the low-cost radar using the manufacturing technology developed, enhancing the open architecture achievements. Continue to advance the MBE effort. ***FY 2013 Plans:*** Complete the land-based integration and testing. Initiate the sub-array string testing. Continue the MBE effort into FY14.			
Title: Chip Scale Atomic Clock ***Description:*** Advanced Electronics Manufacturing: 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. Objectives include improving the existing batch manufacturing processes such as atomic cell filling, cell sealing, physics package assembly, and sub-system testing to reduce the "touch hours" required for CSAC assembly and testing. Development of a network of multiple vendors to foster competition and ensure a viable supply base is a complementary goal. Current manual assembly processes can produce CSAC in small quantities with low yield at high cost ($8,000 / unit). The DMS&T funding will enable producibility at an affordable cost ($100 – 300 / unit). Successful performance will enable an environment of continued operation of critical C4ISR 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 2011 Accomplishments:*** Demonstrated a production-ready manufacturing process for resonance cell and physics package fabrication on chip scale atomic clocks. ***FY 2012 Plans:*** Advance the manufacturing process toward an automated assembly phase, achieving 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. ***FY 2013 Plans:*** Complete development of the physics package fabrication process (batch processes/automated assembly). At completion of Phase II (Jul-Aug 2013), the contractors will each deliver 100 CSACs demonstrating their pilot line capability and validating their readiness for low-rate initial production (MRL 8). CSAC in LRIP quantities will be available to system integrators for DoD products.	4.405	7.109	3.493

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Implement a transition to the GPS Wing, PEO Command, Control, Communications – Tactical (C3T), PEO Intelligence, Electronic Warfare, and Sensors (IEW&S) and others.			
Title: Fiber Placement of Out of Autoclave Composites ***Description:*** Advanced Materials Manufacturing: 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. The initial phase of this project focused on the development of the fiber placement process. The goal is to demonstrate the lay down rates required to meet projected fabrication rates 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 2011 Accomplishments:*** Methods of fabricating out of autoclave composite components via fiber placement were defined for commercially available domestic fiber placement machines; methods were demonstrated on representative aerospace parts. Techniques were published and distributed throughout the composites supplier base. Contractors completed the analysis of the parts and are continuing to review data.	0.377	-	-
Title: Field Assisted Sintering Technology ***Description:*** Advanced Materials Manufacturing: This effort addresses limitations of conventional sintering 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 the potential to dramatically reduce cycle time and manufacturing costs, 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, infrared windows, heat sinks for electromagnetic propulsion cooling, and hypersonic and high temperature for enhanced performance jet propulsion. The project will mature the technology, resulting in reduced cost and cycle times for conventional materials, and higher performance for nano-structured materials.	0.722	0.630	0.571

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Fabricated EFPs (explosively formed penetrators) and components, ballistic tiles, and functional components. Demonstrated experimentally the benefit of WC (Tungsten Carbide) additives for minimizing grain growth in both Ta (Tantalum) and W (Tungsten). Began sintering study on WC-12%Co. Designing molds for mass production by FAST. ***FY 2012 Plans:*** Implement process for full scale components, document material and process specifications, support transition to industry for selected components. ***FY 2013 Plans:*** Fabrication of automated sample handling system, implementation/testing of automation, optimization of automation system, document process efficiency/cost savings.			
Title: Sensor Hardening ***Description:*** Advanced Electronics Manufacturing: 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. The TRL will increase to 6 and the program will demonstrate the capability to produce a prototype in a production environment. The goal is to transition laser-hardened FPAs in time for the F-35 Block 5 Upgrade. These technologies are applicable to any Medium Wavelength Infrared detector, including those on tactical and reconnaissance sensor systems. ***FY 2011 Accomplishments:*** Completed the initial MRA. Continued efforts to address FPA damage through enhancement of the ROIC detector, incorporating design changes simultaneously with wafer scale-up to increase manufacturability. ***FY 2012 Plans:*** Continue wafer size enhancements and defect reduction work. Initiate an FPA production scale-up effort. ***FY 2013 Plans:*** Conclude FPA production scale-up activities, achieving a TRL6/MRL6 level by 4Q-FY13. Make available a Hardened EOTS FPA (by Q2-FY13) and a Hardened EODAS FPA (Q4-FY13). Continue a systems engineering study on targeting and warning. Conduct transitional activities in preparation for the F-35 Block 5 Upgrade decision point (scheduled for FY14).	2.080	0.409	0.953
Title: Large Affordable Substrates	1.675	1.039	0.635

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: Advanced Electronics Manufacturing: 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. Large, affordable CZT substrates from a 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 2011 Accomplishments:*** Conducted tradeoffs, selected initial process improvement targets for boule growth and substrate surface finish, and completed baseline lots through array fabrication. Supplied a 5x5 cm substrate for fabrication of an adaptable focal plane array. Initiated processing to increase boule diameters to 125 mm. Applying detector architecture and sensor chip assembly concepts to develop a camera system to be employed in lab/flight testing. ***FY 2012 Plans:*** Complete boule growth process improvements and initial surface finish. Complete baseline lots through FPA testing. Enhance wafer sizes to 9x9 cm from 125 mm diameter boules. Continue efforts toward a TRL/MRL target of 6/7 and commencement of low rate production in FY13. ***FY 2013 Plans:*** Complete boule yield (diameters to 150 mm) and polishing yield initiatives. Fabricate 9x9 cm wafers from 150 mm boules. Initiate a Low Rate Production status. Conduct a final demonstration of the product. Obtain a TRL6/MRL7 level. Participate in a 3rd Gen Forward Looking Infrared Radar - Software Development and Demonstration build (in 3Q- FY13), using substrates from the 150 mm boules.			
Title: Rapid Manufacturing of Aerospace Structures ***Description:*** Advanced Materials Manufacturing: There is a strong need to fabricate timely and affordable aerospace structures in a production environment for rapid fielding of materials and systems to serve the defense manufacturing base. An example of a system that could benefit from direct part manufacturing (DPM) is one in which there are multiple, complex, embedded systems, such as air flow control actuators within an inlet duct. This demonstration will involve design, fabrication, testing and analysis of performance, manufacturability and	2.513	0.627	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
maintainability. Other designs such as conformal lattice structures, with high strength and low mass, are highly advantageous for micro air vehicle designs, but may only be successfully manufactured using methods such as direct digital manufacturing. ***FY 2011 Accomplishments:*** Advanced process stability and demonstrated improved process control and material properties. Software development was completed for easy design and fabrication of conformal lattice structures. A fuselage and wings for a small remotely piloted aircraft was fabricated. An inlet duct for a remotely piloted vehicle (RPV) with active flow control components was designed. Active flow control inserts were fabricated using selective laser sintering and fused deposition modeling. ***FY 2012 Plans:*** Further iterations of demonstration articles will continue to validate the ability of rapid manufacturing techniques to fabricate timely affordable structural components. The full composite inlet duct with active flow control will be fabricated and tested.			
Title: Carbon Nanotube Cable ***Description:*** Advanced Materials Manufacturing: There are increasing demands on platform electric power generation and distribution, and issues with copper current limits, weight, and thermal management. Efficient and lightweight power generation and transmission are required for megawatt directed energy weapons and electric launch systems. Seeking the solution will provide reduced weight in signal and power cables, enable increased use of ISR sensors, enable higher frequency power systems, which are inherently lighter weight. Increase throughput of CNT wire and sheet systems through in-situ quality controls, enable rail gun and directed energy systems, and enable long distance power distribution. ***FY 2011 Accomplishments:*** The high-throughput CNT furnace underwent qualification testing. Pure CNT conductors ranging from 0.125” to 0.5” were produced from CNT sheet material. Samples were electroplated on each end and tested at increasing current loads. Accomplished multiple manufacturing process improvements including an in-situ, non-contact conductivity gauge.	1.488	-	-
Title: Advanced Electronics and Optics ***Description:*** Advanced Electronics is a series of efforts addressing advanced manufacturing technologies for a wide range of applications such as sensors, radars, power generation, switches, and optics for defense applications. These efforts will provide significant productivity and efficiency gains in the defense manufacturing base. These manufacturing technologies will accelerate delivery of technical capabilities to impact current warfighting operations, and manufacturing technologies to reduce the cost, acquisition time and risk of our major defense acquisition programs.	0.264	0.315	4.762

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
One significant issue is the need to move toward lead-free electronics. However, current methods to produce lead-free solder create further issues such as the formation of unwanted tin whisker structures, which can cause electronics to short out. The Tin Whisker Mitigation project will demonstrate controlled grain structure in soldered joints and plated surfaces. The objective is to show significantly reduced or completely prevented tin whisker growth, while maintaining the original performance characteristics of the test components. Another emerging manufacturing technology undergoing development is for Silicon Carbide High Efficiency Power Switches to enable a new class of power electronics that allows flexible new architectures at higher voltages, higher frequencies, less volume / weight, higher temperatures, higher efficiency (reduced fuel consumption), and better power quality for PEO GCS and the AMDR Radar Power Conversion Module. Future efforts will focus on advances in fuel cells, radars, conformal sensors, and solder free electronics. ***FY 2011 Accomplishments:*** Studies of advanced manufacturing needs in electronics to permit efficient execution of FY12 Silicon Carbide High Efficiency Power Switches efforts. ***FY 2012 Plans:*** Award the Tin Whisker Mitigation and the Silicon Carbide High Efficiency Power Switches programs. Perform feasibility tests on the lead-free joints and plates to demonstrate elimination of tin whiskers. ***FY 2013 Plans:*** Develop manufacturing technologies to Increase throughput and decrease cost of SiC power devices through enhanced material growth and high-yield device fabrication processes			
Title: Advanced Materials Manufacturing	-	1.180	5.875
Description: Advanced Materials Manufacturing is a series of efforts addressing advanced manufacturing technologies for a wide range of materials such as composites, metals, ceramics, nanomaterials, metamaterials, and low observables. These efforts will provide significant productivity and efficiency gains in the defense manufacturing base. These manufacturing technologies will accelerate delivery of technical capabilities to impact current warfighting operations, and manufacturing technologies to reduce the cost, acquisition time and risk of our major defense acquisition programs. Emerging manufacturing technologies undergoing development include: Large Scale Demonstration of Fiber Placement for Out of Autoclave Composites to enable the manufacture of very large composite parts for mobility aircraft without the need for an autoclave; Cast Eglin Steel to enable the MRAP current steel hull underbody to meet the objective threat; Net Shape Field			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Assisted Sintering to enable fully dense ultra high temperature ceramics for non-eroding dual pulse nozzles for future missiles and leading edges for hypersonic vehicles; and Cold Spray deposition of metal alloys to enable repair instead of replacement magnesium components for helicopters; rapid and precise application of thermoplastic materials for filling of fasteners applied via ultrasound or hot melt (near term benefit to JSF). Future efforts will focus on manufacturing of materials for ballistic survivability and manufacturing of materials for rapid fabrication of structural components. ***FY 2012 Plans:*** Award programs in Cast Eglin Steel, Net Shape Field Assisted Sintering, and Fastener Fill. ***FY 2013 Plans:*** Award programs in Cold Spray deposition. Establish the material specification limits for Cast Eglin steel in accordance with these applications. Begin demonstrations of Net Shape Field Assisted Sintering with refractory rare earth materials.			
Title: Enterprise and Emerging Manufacturing ***Description:*** Enterprise and Emerging Manufacturing is a series of efforts addressing advanced manufacturing technologies and enterprise business practices for defense applications. Key focus areas include direct digital (or additive) manufacturing, advanced manufacturing enterprise, machining, robotics, assembly, and joining. These manufacturing technologies and enterprise business practices will accelerate delivery of technical capabilities to impact current warfighting operations, and manufacturing technologies to reduce the cost, acquisition time and risk of our major defense acquisition programs. Emerging manufacturing technologies undergoing development include: Hybrid Direct Digital Manufacturing which combines conventional polymer deposition processes such as selective laser sintering with direct write methods to create embedded components, such as antenna or sensors; Advanced Manufacturing Enterprise projects such as Technical Data Package for the Digital Enterprise, which seeks to develop the methods for exchange of 3D official technical data throughout the supply chain and between government and contractors. Future efforts will focus on advances in direct digital manufacturing for polymers, metals, and electronics; and joining of dissimilar materials for a variety of DoD applications. ***FY 2011 Accomplishments:*** Requirements Based Cost Modeling System ***FY 2012 Plans:***	0.397	0.827	1.708

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Award programs in Hybrid Direct Digital Manufacturing, Adaptive Digital Manufacturing, and Advanced Manufacturing Enterprise ***FY 2013 Plans:*** Begin fabrication and testing of hybrid direct digital manufacturing test specimens, develop initial processes to integrate electronic elements and sensors into thin film transistor arrays. Establish critical information needed for data exchange between supply chain members for the fabrication of components for defense systems.			
Accomplishments/Planned Programs Subtotals	17.510	16.277	21.966

	FY 2011	FY 2012
Congressional Add: Industrial Base Innovation Fund	23.878	30.000
FY 2011 Accomplishments: Program investments in manufacturing technology that: address urgent operational needs; expand domestic manufacturing capacity; and address concerns over limited competition or reliance on foreign sources for certain defense products. The IBIF programs all serve to address key defense-wide manufacturing science and technology issues, with the additional requirements of addressing surge and/or diminishing material source issues. In addition, these programs have a clear transition path with implementation on a current platform or one undergoing acquisition targeted to be within 2-3 years of project completion. The following areas of investment were selected for funding and enable advanced manufacturing production improvements for transparent armor, stealth technology, targeting systems and other key joint defense technologies: •Adaptive Machining – to develop part measurement technology for direct measurement on the tool surface and/or during machining •Automation of Non-destructive Evaluation – to develop automated analysis methods for assessing part quality at reduced labor time and cost •Electro-optical Targeting System Producibility – to develop automated technology for the production of a targeting system, reducing cost and hand labor •Low Observable Producibility – manufacturing scale-up for stealth technology materials •Metals Direct Digital Manufacturing – to advance direct digital manufacturing for metallic structures, reducing lead times for critical parts •Optical Windows – to improve manufacturing capabilities for large aluminum oxynitride (ALON) structures for transparent armor and airborne sensors •Supply chain Technical Data Package – to increase the ability for smooth operation of the defense industrial base supply chain		

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

	FY 2011	FY 2012
•Connecting American Manufacturing – to create a national-level, integrated framework to enable rapid, high-density, multi-sector brokering between buyers and US suppliers Multiple platforms will benefit from these programs including joint light tactical vehicles (JLTV), mine resistant ambush protected (MRAP) vehicles, F-35, and the Zumwalt class destroyer (DDG-1000). Broad agency announcements and requests for proposals sent to industry for the IBIF topics. Most projects are in the final stages of procurement or have been awarded. ***FY 2012 Plans:*** Program investments in manufacturing technology that: address urgent operational needs; expand domestic manufacturing capacity; and address concerns over limited competition or reliance on foreign sources for certain defense products. The IBIF programs all serve to address key defense-wide manufacturing science and technology issues, with the additional requirements of addressing surge and/or diminishing material source issues. In addition, these programs have a clear transition path with implementation on a current platform or one undergoing acquisition targeted to be within 2-3 years of project completion.		
Congressional Adds Subtotals	23.878	30.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• (BA3) 0603680F: *Air Force ManTech*											
• (BA7) 0708045A: *Army ManTech*											
• (BA7) 0708011N: *Navy ManTech*											
• (BA7) 0708011S: *DLA ManTech*											

D. Acquisition Strategy

Not applicable for this item. Outyear data for "Other Program Funding" is contained within the Service budgets.

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

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	-	26.160	24.662	-	24.662	24.675	25.116	23.399	23.826	Continuing	Continuing
P795: *Emerging Capabilities Technology Development*	-	26.160	24.662	-	24.662	24.675	25.116	23.399	23.826	Continuing	Continuing

A. Mission Description and Budget Item Justification

This funding develops emerging capabilities in support of near and mid-term irregular warfare needs guided by the framework Secretary of Defense (SECDEF), under Secretary of Defense (USD) Acquisition Technology and Logistics (AT&L), Assistant Secretary of Defense (ASD) Research and Engineering (R&E), of Deputy Assistant Secretary of Defense (DASD) Rapid Fielding (RF) and Rapid Reaction Technology Office (RRTO) objectives and focus areas. With an emphasis on interagency and Service partnerships, initiatives are developed to pursue risk-reducing prototypes and demonstrations in order to produce capability options that anticipate and inform formal joint and interagency requirements and acquisition processes. Individual projects generally span a two to three year period and are demonstrated and fielded in spirals within that project timeline. In addition, during FY 2012 and FY 2013 the office will expand a maritime portfolio focused on irregular warfare capabilities in that domain as a complement to the existing maritime technology demonstrator and ground and Inteligence, Surveillance, and Reconnaissance (ISR) portfolios. This Program Element has evolved from exclusive support of force transformation activities to the activities described above, which are more closely aligned with departmental goals.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	26.972	32.298	-	32.298
Current President's Budget	-	26.160	24.662	-	24.662
Total Adjustments	-	-0.812	-7.636	-	-7.636
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-0.632			
• Baseline Adjustments	-	-	-7.636	-	-7.636
• FFRDC	-	-0.180	-	-	-

Change Summary Explanation

Baseline Review. A zero-based review to align resources to the most critical priorities and eliminate lower priority functions.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P795: *Emerging Capabilities Technology Development*	-	26.160	24.662	-	24.662	24.675	25.116	23.399	23.826	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 develops emerging capabilities in support of near and mid-term irregular warfare needs guided by the framework Secretary of Defense (SECDEF), under Secretary of Defense (USD) Acquisition Technology and Logistics (AT&L), Assistant Secretary of Defense (ASD) Research and Engineering (R&E), of Deputy Assistant Secretary of Defense (DASD) Rapid Fielding (RF) and Rapid Reaction Technology Office (RRTO) objectives and focus areas. With an emphasis on interagency and Service partnerships, initiatives are developed to pursue risk-reducing prototypes and demonstrations in order to produce capability options that anticipate and inform formal joint and interagency requirements and acquisition processes. Individual projects generally span a two to three year period and are demonstrated and fielded in spirals within that project timeline. In addition, during FY 2012 and FY 2013 the office will expand a maritime portfolio focused on irregular warfare capabilities in that domain as a complement to the existing maritime technology demonstrator and ground and Inteligence, Surveillance, and Reconnaissance (ISR) portfolios. This Program Element has evolved from exclusive support of force transformation activities to the activities described above, which are more closely aligned with departmental goals.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Overwatch	-	4.380	5.026
Description: Overwatch is an overarching ground capability development effort which seeks to leverage technology and new concepts to fill ground combat and interagency capability gaps. It contains multiple initiatives seeking to cultivate and leverage emerging technologies and concepts to counter the current and future challenges characteristic of the irregular warfare environment. Projects are oriented toward increasing war fighter effectiveness on the battlefield and/or the development/ enhancement of “whole of government” irregular warfare capability. The capability development effort furthers interagency capabilities by pursuing concept experimentation/validation, interoperability enhancements, and command and control development. Ground capabilities focus on command and control, force protection, situational awareness, and networked, cooperative engagement. 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 ten active subordinate projects: the Enhanced Mortar Targeting System; Campaign Planning and Assessment Requirements/Identifying Human and Technological Resource Requirements; Forward Operating Base Defense			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Integrated Protection Initiative; Off-the-shelf Guided Munitions; Walking Papers: Building Geospatial Understanding; QuickNETS Humanitarian Assistance/Disaster Relief efforts; Spectral Management efforts for equipment; Building Effective Institutions; NextTECH; and, Intelligent Small Unit Power (ISUP) efforts to reduce small unit fuel consumption. Spectral Management efforts, NextTECH and ISUP are new efforts for FY 2012. The Spectral Management effort will produce coatings to reduce the signature of U.S. equipment in the field to reduce vulnerability to emerging sensor modalities. NextTECH will identify emerging technology areas that are likely to disrupt traditional military production or significantly enhance the ability of non-state actors to produce effects traditionally associated with national forces. The Intelligent Small Unit Power initiative will look at modifying existing equipment to reduce fuel dependencies and usage at the lowest tactical level. Additional projects will be developed and informed by Deputy Assistant Secretary of Defense (DASD) Rapid Fielding (RF) and Rapid Reaction Technology Office (RRTO) objectives and focus areas. ***FY 2013 Plans:*** In FY 2013, the Enhance Mortar Targeting System; Spectral Management efforts for equipment; Intelligent Small Unit Power (ISUP) efforts to reduce small unit fuel consumption; and Off-the-Shelf Guided Munitions projects will continue development. New projects for FY 2013 will include: Tactical Counter Mortar and Electromagnetic Environmental Understanding. The Tactical Counter Mortar project will develop a wheeled-vehicle class counter mortar/rocket capability. Electromagnetic Environmental Understanding will explore how social media and emerging network technologies can be identified and exploited by a tactical unit. The project will develop tools at the tactical level to understand the normal or baseline electromagnetic environment. Additional projects will be developed and informed by DASD (RF) and RRTO objectives and focus areas.			
Title: Maritime Irregular Warfare/Stiletto ***Description:*** As a complement to the Stiletto dedicated maritime demonstration vessel, the Maritime Irregular Warfare portfolio investigates and develops irregular warfare capability gaps in the maritime domain. Recent projects conducted by RRTO have highlighted a significant gap in maritime capability against non-traditional challenges, which this portfolio addresses. Stiletto is a maritime demonstration platform designed to assist in the rapid transition of technologies applicable across the range of military operations to higher Technology Readiness Levels. The 88-foot long boat is an experimental, all carbon fiber craft originally built to explore the scalability of non-mechanical dynamic lift, composite carbon fiber construction, and high-speed performance for military operations. The craft was purposefully designed to rapidly acquire, deploy, and employ new capabilities to explore the military utility of emerging technologies and concepts of operation for special and expeditionary forces. Both the craft and its systems were designed to be flexible, modular, and re-configurable to enable near “plug-and-play” installation of C4I equipment used as part of experimentation. The Stiletto program, managed in partnership with the Naval Surface Warfare Center’s Combatant Craft Division and the Naval Air Warfare Center Aircraft Division’s Warfare Innovation Cell, streamlines the experimental process and helps facilitate the	-	2.805	8.025

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
rapid demonstration, exploration, and risk reduction of emerging technologies and capabilities. The craft's simple application process for experimentation is intended to provide low cost access for industry, government and academic organizations to install and prove their systems in a realistic maritime environment. The demonstration process also encourages system developers to engage directly with the warfighter in the maritime environment to rapidly adapt technologies around warfighter needs. The Stiletto vessel is homeported in Norfolk, Virginia. ***FY 2012 Plans:*** The Maritime Irregular Warfare Portfolio explores the development of counter evolved non-state capabilities such as semi and fully submersible vehicles and swarms, countering unmanned swarms, maritime non-lethal weapons systems, and low cost littoral fire support, among other capabilities. Within that context, NAUTICUS is a new FY 2012 effort to non-invasively identify contraband materials such as explosives or illegal drugs being transported by maritime vessels underway. Stiletto will continue to serve as a maritime demonstration platform. Increase in funding reflects the development of the maritime domain irregular warfare capability development portfolio. For Stiletto, the intent is to expand the number of opportunities for non-traditional businesses that have not worked 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. Stiletto plans to participate in the Trident Warrior operational experiment in FY 2012 as a "control ship" for multiple unmanned autonomous vessels. Additional opportunities will be sought to assist the Combatant Commands (COCOMs) and services in experiments and exercises, as well as in demonstrating state-of-the-art capabilities in anticipation of future needs. ***FY 2013 Plans:*** Further development of the Maritime Irregular Warfare Portfolio is planned for FY 2013, specifically exploring the development of counter evolved non-state capabilities such as semi and fully submersible vehicles and swarms, countering unmanned swarms, maritime non-lethal weapons systems, and low cost littoral fire support, among other capabilities. In FY 2013, projects will focus on partnerships with Navy, U.S. Coast Guard, Army Watercraft Systems, SOCOM, SOUTHCOM, and other operational users. Stiletto will continue to serve as a maritime demonstration platform. Increase in funding reflects the growth of the maritime domain irregular warfare capability development portfolio. For Stiletto, the intent is to expand the number of opportunities for non-traditional businesses that have not worked 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, with specific focus on technology transition. Specific focus for demonstrations will be on evaluating unmanned systems capabilities; sensors; launch and recovery; and human factors. Stiletto plans to pursue participation in planned operational experiments in FY 2013 such as Trident Warrior and Trident Spectre, as well as hosting capability development exercises with operational commands such as Naval Expeditionary Combat Command, Army Watercraft Systems, and Naval Special Warfare.			
Title: Hybrid Airship	-	12.000	6.000

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

Description: In conjunction with the NASA-Ames Research Center the USAF Research Laboratory, and U.S. Transportation Command (USTRANSCOM), the Department has undertaken a hybrid airship project which is a non-deployable technology demonstrator that integrates independent technologies into a single, rigid aeroshell variable buoyancy (RAVB) air vehicle. The project 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 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 U.S. 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.

Using a two step process, the project has been reduced to a four year program. Step one, in FY 2011, consisted of Assistant Secretary of Defense (ASD) Research and Engineering (R&E) providing an additional $6.000 million to the program (new total FY 2011 $14.000 million) to fund acceleration of the actions needed for early completion. These actions consisted of finalizing vehicle design, analysis, and subsystem prototyping/testing. Step two of this process was to roll some of the requested FY 2013 funding ($5.000 million) into FY 2012 to fund systems integration and construction plus ground and flight testing. This project is an interagency effort between the Department of Defense, the National Aeronautics and Space Administration Ames Research Center, and the USAF Research Laboratory.

FY 2012 Plans:
The funding increase in FY 2012 was for the acceleration and technical risk reduction to the hybrid airship initiative. Specifically, the project will evolve from its current technical demonstrator approach to a program to develop a prototype suitable for transition.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Additional FY 2012 actions include completion of integrated subsystems and vehicle assembly followed by a Flight Readiness Review of the air vehicle prior to full hangar tethered flight testing and full flight testing. ***FY 2013 Plans:*** In FY 2013, U.S. Transportation Command will have assumed oversight of further this efforts developmental initiatives. Funding will support the development of follow-on demonstrations and capability development.			
Title: Thunderstorm	-	4.273	4.261
Description: Thunderstorm is an enduring multi-Intelligence technology demonstration venue for the Office of the Secretary of Defense, interagency partners, Combatant Commanders, Services, academia, government laboratories and commercial vendors. It provides participating partners with an opportunity to evaluate and assess the capabilities of new and emerging Intelligence, Surveillance, and Reconaissance (ISR) technologies and related information collection, processing, exploitation, and dissemination (PED) capabilities prior to full-scale operational employment. Within this context, as many as four multi-intelligence technology demonstration opportunities per year can be conducted in mission-related, geographically and operationally relevant areas where the effectiveness of offensive and defensive capabilities of evolving ISR architectures, emerging technologies and transformational concepts can be tested and evaluated. DoD, other government organizations, international, commercial and academic partners can demonstrate new, legacy and emerging detection, cueing, monitoring, tracking and handoff ISR technologies in real-world and simulated scenarios. Thunderstorm technology demonstrations lend themselves to developing enduring interagency ISR information sharing tactics, techniques, procedures and collaboration tools and developing scenarios, using multi-Intelligence engagement, which minimize in-theater or on-site information processing, exploitation and dissemination (PED) requirements to advance remote PED capabilities for the DoD and interagency partners. Using Thunderstorm demonstration objectives, performance measures, lessons learned, and post-demonstration assessments and data evaluation, ISR operational and architectural improvements are developed and codified. ***FY 2012 Plans:*** In FY 2012, funding supports the planning and execution of the Thunderstorm Spiral 5.0 technology demonstration. Execution of this summer 2012 spiral in the Rio Grande Valley Customs and Border Protection (CBP) Sector will leverage DHS/CBP involvement as well as Joint Task Force North (JTF-N) and Joint Inter-Agency Task Force-South (JIATF-S) in supporting roles. The Rio Grande Valley was chosen for this spiral because it offers multi-Intelligence demonstration opportunities against land, air, sea and littoral scenarios. These scenarios serve to challenge ISR assets in multiple domains and will highlight the strengths and weakness in each. In the Spring of FY 2012, a related, but less complex Intelligence, Surveillance, and Reconnaissance (ISR) technology demonstration called Bluegrass will take place. The objective of the Bluegrass exercise is to amass large urban/suburban data			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
sets using ISR/wide-area motion imagery sensors tracking designated actors and use these data sets with known or "ground truth" information to develop and improve urban/suburban wide-area motion analysis techniques for the DoD, agencies and industry. ***FY 2013 Plans:*** In early FY 2013, planning will begin for subsequent Thunderstorm Spirals building on previous iterations. Using Thunderstorm Spiral 5.0 demonstration objectives, performance measures, lessons learned, and post-demonstration assessments and data evaluation, detailed plans will be developed to complement current operational challenges. Thunderstorm Spiral 5.1 will return to the Rio Grande Valley to employ lessons learned in FY 2012 and improve the tactics, techniques and procedures using more complex scenarios to improve sensor capabilities, data integration, and processing, exploitation, and dissemination capabilities. Results of the FY 2012 Bluegrass demonstration will be used to determine follow-on activities for this effort.			
Title: Emerging Space Capabilities ***Description:*** This new portfolio will apply the RRTO business model of relatively low-cost, short duration, high-impact, gap filling investments to complement Air Force and National Reconnaissance Office initiatives in pursuit of the National Space Strategy objective to preserve the space environment. Projects will be synchronized with other ongoing interagency efforts and seek to pursue research and development of technologies and techniques to mitigate and remove on-orbit debris, reduce hazards, and increase understanding of the current and future debris environment. This project also seeks to develop partnerships with the private sector to develop new and emerging space technology; and explore non-traditional approaches to rapid satellite development and launch in order to quickly respond to changes in the threat environment. In addition, during FY 2013 the office will focus the space portfolio on new space capabilities that complement existing ISR portfolios. ***FY 2012 Plans:*** In FY 2012, this project purses the development of unique emerging capabilities in support of low-earth orbit debris mitigation and support needs guided by the National Security Space Strategy to preserve the space arena. With an emphasis on interagency and service partnerships, initiatives will seek risk-reducing technology and prototypes that minimize orbital debris hazards. ***FY 2013 Plans:*** In FY 2013, projects focused on orbital debris mitigation and preservation of the space arena will continue. In addition, projects will be initiated to develop partnerships with commercial entities that develops new and emerging space technology with the goal of recognizing and mitigating technological surprise and improving multi-Intelligence sensing, processing, exploitation and dissemination capabilities.	-	2.200	1.000
Title: Science and Technology Support to Information Operations	-	0.502	0.350

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: This new portfolio will apply the RRTO business model of relatively low-cost, short duration, high-impact, gap filling investments to complement DoD, State Department, and Department of Homeland Security initiatives in the areas of Information Operations, Strategic Communication, and Public Diplomacy. Projects of particular interest include efforts to fill gaps in tools and capabilities that support the National Counterterrorism Strategy and the Countering Violent Extremism (CVE) Abroad Framework by developing measures of effectiveness, social media analysis, and counter-narrative capabilities. Specific support to COCOM needs will be coordinated through the Director for Information Operations in the Office of the Under Secretary of Defense for Policy, Special Operations and Low Intensity Conflict (SO/LIC). ***FY 2012 Plans:*** In FY 2012, the office will develop the portfolio by updating its previous survey and gap analysis of the U.S. Government's science and technology for strategic communication, broadening the field to include information operations. The update will focus on existing and needed technical capabilities to respond in a systemic, rapid, sustained and measurable way to adversarial narratives being used to undermine our military and security efforts. It will also look at technologies to rapidly analyze and respond to those narratives in the information environment. The update will identify gaps in seven areas to guide future project developments: analytical tools, production, content delivery, research, planning, training, and evaluation tools. Utilizing this gap analysis, several projects will be funded in FY 2012 to support Information Operations and CVE needs in partnership with SO/LIC, the COCOMs, State Department's Center for Strategic Counterterrorism Communications, USAID, and the Department of Homeland Security's S&T and Human Factors programs. Specific emphasis will be placed on capabilities beneficial to the priority countries identified by the National Security Staff. ***FY 2013 Plans:*** Utilizing the report and gap analysis will complete in FY 2013. Projects funded in FY 2013 will support Information Operations and CVE needs in partnership with SO/LIC, the COCOMs, State Department's Center for Strategic Counterterrorism Communications, USAID, and the Department of Homeland Security's S&T and Human Factors programs. Specific emphasis will be placed on capabilities beneficial to the priority countries identified by the National Security Staff. Projects will focus on developing technologies and capabilities in the areas of measurement of effectiveness, social network analysis, advanced communications technologies, and other areas identified through partnerships with other DoD and interagency stakeholders.			
Accomplishments/Planned Programs Subtotals	-	26.160	24.662

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 4-2D. 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 FY2011, Emerging Capabilities Technology Development had 100% of its completing projects successfully transition.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	9.567	9.516	-	-	-	-	-	-	-	Continuing	Continuing
P710: *Joint Robotics Program/ Autonomous Systems*	9.567	9.516	-	-	-	-	-	-	-	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 three or four with the intent to mature them through JGRE efforts to TRL six.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	9.843	9.756	10.071	-	10.071
Current President's Budget	9.567	9.516	-	-	-
Total Adjustments	-0.276	-0.240	-10.071	-	-10.071
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.190	-0.175			
• FFRDC	-0.033	-0.065	-	-	-
• Section 8117 - Economic Assumptions	-0.051	-	-	-	-
• Other Program Adjustments	-0.002	-	-10.071	-	-10.071

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P710: *Joint Robotics Program/ Autonomous Systems*	9.567	9.516	-	-	-	-	-	-	-	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 three or four with the intent to mature them through JGRE efforts to TRL six.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Command, Communication & Control	0.791	1.118	-
Description: Development of data delivery, control and display, or task execution technologies which will enhance unmanned ground vehicle operations, reduce operator loads and improve effectiveness. Development and integration of communication, mission planning, human-robot interface technologies, and advanced intelligence capabilities to support robotic operations. ***FY 2011 Accomplishments:*** 1) Natural Human Robot Interface - This effort involves the development of a natural human-robot interface that eliminates the need for bulky platform-specific controllers (OCUs) that are operator intensive, with minimal dependence upon robot-specific hardware. The Natural Human-Robot Interface (HNRI) can control both a mobile platform and one or more highly dexterous (six plus DOF) manipulators. This project is expected to start in FY 2012. 2) Distributed Control & Data for Small Unmanned Ground Vehicles - Distributed control and data sharing for EOD small UGVs will increase capabilities of EOD technicians during tactical operations. The majority of EOD missions require two EOD technicians to safely and effectively carryout tactical procedures. One of the EOD technicians operates the UGV, while the other technician (the lookout EOD technician) observes the mission from over the shoulder of the UGV operator. The distributed control and information capability will provide the lookout EOD technician with independent control and data from the UGV visual sensors. This capability will reduce time on target and increase mission effectiveness by evenly distributing tactical tasks between the EOD team members. This project is expected to start in FY 2012.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
3) Non-Radio Frequency (RF) Communication for Small Unmanned Ground Vehicles - This project will research, develop, and evaluate alternative methods to RF communications small UGV. - Completed Interrogator Fabrication - Completed Interrogator field tests - Completed Interrogator Demonstrations - Completed Modulating Retro-Reflector Fabrication - Finalized Pod Relay Fabrication - Finalized Pod Relay Mount Fabrication - Held System Demonstration and Delivery ***FY 2012 Plans:*** 1) Natural Human Robot Interface - Track technologies will be combined with state-variable information describing the mission to determine the proper supporting behavior for the robot under the current conditions, somewhat analogous to the synergistic interaction of a hunter and a bird-dog - A non-obtrusive human-robot interface will be developed that will allow the Warfighter to employ the same equipment currently used to communicate with other Warfighters in order to interact with the UGV to supervise or modify its behavior if needed, thus obviating the need for a dedicated OCU 2) Distributed Control & Data for Small Unmanned Ground Vehicles - Investigate and develop distributed control system ***FY 2013 Plans:*** 1) Natural Human Robot Interface - Platform demonstrations and final report will be completed 2) Distributed Control & Data for Small Unmanned Ground Vehicles - Technology Demonstration and assessments will be performed to examine technology in operational environment			
Title: Interoperability ***Description:*** Promote and guide technology development to meet joint requirements and promote ground as well as air unmanned systems interoperability. Support the bridging of currently incompatible robots and controllers from various manufacturers, using different communications channels and hardware. Optimize best features of prior/ongoing research efforts into a maturing, standardized system that can be easily ported to robotic platforms used throughout the DoD. ***FY 2011 Accomplishments:*** 1) Interoperability Profiles - Development of a set of interoperability profile documents based on SAE AS 4.0 messages, open standards and interfaces for platforms, payloads, control, and communications data links along with video/audio standards.	0.857	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
The immediate need for more complex systems such as unmanned Applique Kit(s) that can turn systems designed to function with soldiers at specific control stations into unmanned systems, and the desire for more autonomy in general will require IOP documents to be more complex with more variable solutions. - Conducted Architecture Trade Studies - Developed and staffed Interoperability Profiles guidance document - Create Robotic System Integration Lab and Virtual System Integration Lab Validation Plan - Analyzed Robotic Operating System and Joint Architecture for Unmanned Systems - Conducted meeting with NATO Industrial Advisory Group Study Group - Publish Interoperability Profile - Conducted Robotic System Integration Lab and Virtual System Integration Lab Validation - Delivered Robotic System Integration Lab and Virtual System Integration Lab Validation Report ***FY 2012 Plans:*** 1) Interoperability Profiles - Extend IOP V0 to autonomous systems, specifically those with Applique Kits ***FY 2013 Plans:*** 1) Interoperability Profiles - Develop testing capability/environment associated with the IOPs for autonomous systems - Verify test environment/procedures, an Applique Kit prototype solution will be provided and tested			
Title: Manipulation ***Description:*** Incorporation of new or existing technologies to enable a 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. ***FY 2011 Accomplishments:*** 1) Highly Dexterous Manipulators for Explosive Ordnance Disposal Robots - The purpose of this project is to develop a Highly Dexterous 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 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. - Dexterous heavy lift hardware and technical documentation package	1.706	0.720	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Feed-forward controls development - Human-machine interfaces phase 1 development and report - End effector interface family technical data package and hardware - Human-machine interface phase II development and report - Operator haptic interface - System integration and testing 2) Modular Point to Manipulate - Robot manipulators on current configured EOD robots are predominately controlled one joint at a time. This type of control makes it difficult for the robot operator to precisely control the position of the manipulator, increasing operator workload and the time it takes to complete the EOD ssion. In order to assist the robot operator in performing manipulation tasks, point to manipulate technology will be developed. With point to manipulate technology, the robot operator simply identifies an object within a video feed on the control unit, and the manipulator automatically moves into position for further inspection and manipulation. The design of the point to manipulate technology, both hardware and software, will focus on a modular design that can be easily ported to different robot platforms with different manipulators. The design will also focus on providing a compact and lightweight package using low-cost parts, such that even inexpensive lightweight platforms can benefit from the technology. This project is expected to start in FY2012. 3) On-Board Shock Tube Dispenser - The purpose of this effort is to develop an On-Board Shock Tube Dispenser (ORSTD) for robotic platforms that allows for greater maneuverability of the platform, a reduction of the operator's time on target, more inclusive searches of the target area, and a reduction in the amount of shock tube that must be transported. The ORSTD will allow the robot operator the flexibility to stage a counter charge on-board the MTRS prior to proceeding down range initially making more efficient use of the on-board firing circuit, and would not require the robot to be tethered to the command post. The ORSTD would provide a reusable spool for shock tube that would enable connection of counter charges to the on-board robot firing system, a designated payload area to carry the counter charge reachable by the robot manipulator, and an automatic cutter for separating the robot from the shock tube once the charge has been initiated. - Stakeholder requirement documentation - Developmental technical data package delivery - TRL six prototype - Developmental test and report - Technology demonstration - Transition plan			
FY 2012 Plans: 1) Highly Dexterous Manipulators for Explosive Ordnance Disposal Robots - Development and complete integration of Haptic feedback - System integration (arm, end effector interface and end effector) and system testing			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Dexterous hardware support 2) Modular Point to Manipulate - Integration of the hardware onto representative EOD UGVs in a modular way that does not rely heavily on precise, manipulator-specific calibration or hard-coded algorithms ***FY 2013 Plans:*** 1) Projects for this area will be determined by 4Q FY 2012			
Title: Mission/Platform Specific ***Description:*** Development of a technology to address the requirements of a particular mission or to be integrated with a specific platform. ***FY 2011 Accomplishments:*** 1) Robotic Range Clearance Competition - Conduct research and experiments to develop, design, and support a robotic vegetation clearance competition. - Purchase necessary equipment to support experimental activities for the vegetation clearance competition design. - Completed Environmental Assessment - Finalized Rules and Metrics for the Competition - Held In Progress Reviews with competitor teams - Final Competition held in Guernsey, Wyoming - Complete report on the competition and filed with Congress 2) Counter Tunnel Exploitation/Mapping - The scope of this effort is to develop and demonstrate robotic system technologies that will enable insertion of a robotic system through a small bore hole into a suspect tunnel cavity for the purpose of conducting precision mapping and characterization operations in the austere tunnel environments (hand-dug border tunnels, caves, etc.). - Finalized and delivered snakebot platform - Started development with sensor suite for the platform - Continued development of the Bore Hole Support Apparatus ***FY 2012 Plans:*** 1) Counter Tunnel Exploitation/Mapping - Develop Autonomy Architecture - Develop 3D Mapping Capability - Integrate first generation Sensor Suite	5.610	1.620	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Miniaturize Sensor Suite - Conduct experiments of the Bore hole apparatus and the snakebot ***FY 2013 Plans:*** 1) Counter Tunnel Exploitation/Mapping - Integrate sensor suite onto the platform - Conduct user assessment of the system - Finalize report on system progress and development 2) Other projects for this area will be determined by 4Q FY 2012			
Title: Navigation ***Description:*** Development of reliable motion planning, path planning, obstacle detection/obstacle avoidance, characterization, and decision analysis capabilities based on the perceived environment and specific missions outlined for the robot. ***FY 2011 Accomplishments:*** 1) Autonomous Mobility Applique System Joint Capability Technology Demonstration - To mitigate risks associated with current and future expected threat environments, the US Army is investigating the possibility of integrating multi-levels of robotic technology into the existing manned fleet through the deployment of an Autonomous Mobility Appliqué System (AMAS). This project is expected to start in FY 2012. ***FY 2012 Plans:*** 1) Autonomous Mobility Applique System Joint Capability Technology Demonstration - Provide scalable autonomy in a single material solution agnostic of vehicle platform - Comprised of two kits: (1) an Autonomy Kit and (2) a By-wire kit. The Autonomy Kit will include the intelligence, sensing, and control capabilities necessary for semi-autonomous behaviors - Enable scalable autonomy through incorporation of a flexible open framework with defined interfaces - Provide an A kit that will provide scalable autonomy and be transferable between platforms with minimum modification and configuration enabling a single point solution for existing manned vehicle fleet ***FY 2013 Plans:*** 1) Projects for this area will be determined by 4Q FY 2012.	-	0.420	-
Title: Outreach & Harmonization ***Description:*** Promote and guide technology development and demonstration through joint requirements with DoD entities, United States government agencies and other civilian organizations to promote the proliferation of ground robotic vehicle capability understanding.	0.603	1.470	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: 1) University Support and Outreach - This project provides support to develop our future engineers in the field of robotics at Universities through two separate events/avenues. Support to the Intelligent Ground Vehicle Competition allows the event to take place each year up at Oakland University in Rochester Michigan. Design and construction of an Intelligent Vehicle fits well in a two semester senior year design capstone course, or an extracurricular activity earning design credit. The deadline of an end-of-term competition is a real-world constraint that includes the excitement of potential winning recognition and financial gain. Support to the United States Air Force Academy allows a senior design team to work on systems designed to fulfill the anti-tunnel capability by performing ISR in cave environments where weapons and/or high value targets are located. The project employs five to ten cadets from USAFA, graduate student(s) (likely from the University of Texas (UT) at Austin), faculty advisors from both USAFA and other universities, as well as engineering mentors/ sponsors. Execution of the project design effort involves creative and well established engineering design methods used in both education and industry. A specific focus for this project is to investigate creative design solutions that have not been previously used. - Supported the Intelligent Ground Vehicle Competition and provided judging for the Joint Architecture for Unmanned Systems challenge as well as the autonomy challenge. 2) SBIR Fast Track - Current cargo pallet on-load/off-load operations are rate-limited by availability of manpower and pallet handling equipment at both garrison and contingency airbases. As such, steps to move to an automated cargo handling system are necessary. - Fabricated and built a prototype system, and demonstrated requirements of objective and description above - Developed Engineering Design Package - Developed a plan for system demonstration - Conducted system demonstration - Prepared demonstration report 3) Cost Benefit Analysis - This study will provide the Department of Defense with an independent cost benefit assessment of the potential effects that robotic systems could have on force structure, focusing on manpower savings within several yet to be determined mission areas (logistics, convoy operations, demining efforts, combat operations, etc). It is expected to start in FY 2012. 4) Test & Evaluation - As more and more Unmanned Ground Systems needs are being determined the number of programs of record for UGVs is increasing. An issue that has been encountered across the UGV community is the minimal capabilities that the test community currently has for testing and certifying safety for these systems. This effort will help to determine what the current			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
capability gaps are and where the T&E community needs to invest resources to fill those gaps. This effort is expected to start in FY 2012. ***FY 2012 Plans:*** 1) University Support and Outreach - Continue to support and fund both the intelligent ground vehicle competition sponsored by association for unmanned vehicle systems international and the senior capstone program at the United States Air Force Academy 2) Cost Benefit Analysis - Determine the appropriate mission areas for the Cost Benefit Analysis - Develop a framework for estimating the potential integration of robotic systems - Analyze the cost-effectiveness and the net benefit of the potential robotic solutions in the selected areas of the framework 3) Test & Evaluation - Through data gathering efforts determine the current capabilities and capability gaps for T&E with regards to UGVs - Develop methodology to fill the T&E gaps - Implement test procedures to fill the gaps identified ***FY 2013 Plans:*** 1) Projects for this area will be determined by 4Q FY 2012			
Title: Perception ***Description:*** Development of post-processing software technologies (proprioceptive and/or exetroceptive) which will enhance unmanned ground vehicle perception capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions. ***FY 2011 Accomplishments:*** 1) Adverse Environment Obstacle Detection - Much work has been done to develop the capabilities of UGV perception sensors for autonomous navigation, however the main advancements to date have focused on performance in a clear and unobstructed environment. While various techniques using multi-sensor perception have shown the ability to extend the detection range of static and moving obstacles, in many cases the addition of dust, rain, snow, or fog in the local environment causes sensor performance degrading or complete failure. This project will endeavor to answer the questions: When do perceptual sensors fail, and why? What combination of sensors would be appropriate for a given operational scenario? Can perceptual sensor failure be reliably detected and mitigated? This project is expected to start in FY 2012.	-	3.297	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
2) Real Time Radio Modeling - The goal of the Real Time Radio Modeling for Robotics project for FY 2011 is to integrate and demonstrate the capability to perform tradeoff analysis of different radios and waveform technologies in performance of the tele-operation functionality in a simulated relevant mission environment. - Integrate PEO-I Communication Effects Server with Joint Tactical Radio System (JTRS) - Integrate JTRS with TARDEC Image Generator (IG) - Integrate JTRS with TARDEC UGV - Development/Integration of COFDM: Qualnet developers from SNT have offered to provide COFDM models. These models can be updated and integrated into the Qualnet tool as needed to measure their performance on streaming video. RS JPO is interested in evaluating COFDM performance on streaming video - Development of Common Data Link (CDL) Model - Development of Digital Data Link (DDL) Model - COFDM/CDL/DDL JTRS Comparison Analysis - Integration of Building Properties of the systems into the model 3) 3D Mapping for Off Road Terrain - A real-time (20 Hz or better) 3D mapping and visualization system is needed to realistically field small UGVs that can operate and provide situational awareness in both indoor and outdoor environments. Most 3D mapping solutions for small UGVs are heavily stereo and visual odometry based, which present significant overload for computation and, in some cases, for illumination for nighttime performance. Therefore, a lidar-based solution is solely proposed here, providing all of the following: - Day and night capabilities, with significant range in both indoor and outdoor conditions, including off-road environments - Operate in robust to complex, dynamic environments that are composed of varying objects such as indoor clutter, outdoor vegetation, etc. - Adaptable to varying 3D sensor fidelity and scalable to varying small UGV configurations - Output high-resolution 3D data capable of being streamed, rendered, and/or displayed in real-time within reasonable bandwidth constraints - Implemented in a modular fashion with government-owned API's to ensure 3rd party integration and comparison to new algorithms and sensors that become available in the future 4) Negative Obstacle Detection - This project will be a focused effort to examine perception requirements and surveying the existing, new, and "coming soon" sensor systems. Based on that analysis, a development approach will be determined and executed to combine existing sensors, modify existing sensors, or develop sensors for this specific application. A large part of the project will be in developing the algorithms to fuse and utilize the selected combination of sensor. This project is expected to start in FY 2012. 5) Enhanced Traversability Analysis for Small Unmanned Ground Vehicles - This project will address the difficulty of small UGVs perceiving off-road environments, which inhibit them from reliably navigating in rough, vegetated terrain. A new class of sensors			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
will be used to greatly improve small UGV traversability analysis and terrain classification. This project will fuse this data with camera imagery to provide enhanced information for better terrain classification. Typical obstacle detection/avoidance will be improved by allowing small UGVs to classify and thus navigate traversable objects, such as grass, brush, and vegetation that would otherwise be perceived as solid objects to avoid completely. The 3D geometry of the terrain can also be better analyzed from a perspective low to the ground, enhancing terrain analysis for off-road path planning. This project is expected to start in FY 2012.			
FY 2012 Plans: 1) Adverse Environment Obstacle Detection - Preliminary analysis to determine the prime areas of competence of candidate sensor solutions, and the combination of sensors most promising for a set of representative UGV scenarios 2) Real Time Radio Modeling - Integration with Building Properties into the model - Integration of Building Properties with TARDEC IG - Integration of Building Properties with TARDEC UGV - Development of Urban Canyon Models - Building Clearing/Urban Canyon Comparison Analysis - Development of rain, snow, wind, and smoke models 3) 3D Mapping for Off Road Terrain - Apply proven 2D mapping capabilities to 3D sensors - Implement in modular fashion and design well-developed API's - Test at both day and night in indoor environments with some clutter and in outdoor, non-planar surfaces. 4) Negative Obstacle Detection - Analyze the perception requirements for negative obstacle detection will be conducted to include - Conduct survey and analysis of existing solutions - Develop reference design - Test and/or simulate reference design 5) Enhanced Traversability Analysis for Small Unmanned Ground Vehicles - Fuse newely available small, multi-return, 3D lidar data with camera imagery - Build upon current methods for traversability analysis			
FY 2013 Plans: 1) Adverse Environment Obstacle Detection - Develop the final system involving multi-sensor solutions for obstacle detection in adverse environments			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
2) Real Time Radio Modeling - Development of rain, snow, wind, and smoke models - Integration with TARDEC IG - Integration with TARDEC UGV - Weather Comparisons Analysis 3) 3D Mapping for Off Road Terrain - Develop prototype - Optimize software - Extend tests to outdoor off-road terrain - Develop software solutions to output 3D maps to 3D visualization software 4) Negative Obstacle Detection - Continue to refine design - Implement design in hardware - Modify existing sensors suites to meet NOD issues - Develop data fusion and algorithms for the sensors - Test design on a midsized UGV over a wide variety of terrains, negative obstacles types and sizes, and vehicle speeds 5) Enhanced Traversability Analysis for Small Unmanned Ground Vehicles - Apply the new sensor data to vegetation classification and 3D geometry of the terrain - Conduct tests on various small UGV configurations to track robustness and portability to varying platform types			
Title: Vision/Sensors	-	0.871	-
Description: Development of technologies (hardware and software) which will enhance unmanned ground vehicle sensory (visual, audible and/or tactile) capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions. ***FY 2011 Accomplishments:*** 1) 3D Improvised Explosive Device Sweep Detection - This proposed project would use existing 3D sensing techniques and a COTS/GOTS high degree of freedom manipulator. The specific technology developed under this effort would be the 3D sweep trajectory generation (using existing 3D sensing techniques) and planning to cover general 3D surfaces while maintaining a sweep profile (speed, surface offset, rate of advance, etc.) that is conducive to optimal sensor performance. This project would address a currently un-addressed objective requirement of the AMDS program CDD. This project is expected to start in FY 2012. ***FY 2012 Plans:*** 1) 3D Improvised Explosive Device Sweep Detection			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Conduct initial trajectory planning work using COTS/GOTS simulation tools using 3D sensor data from a man-transportable UGV in a relevant environment within the simulator as well as a kinematically and dynamically correct model of the manipulator and base platform ***FY 2013 Plans:*** 1) 3D Improvised Explosive Device Sweep Detection - Transition algorithms to real hardware (platform, manipulator, and sensors) - Develop and capture test plans and performance metrics - Conduct a HRI study and design will be conducted and implemented for this specific application 2) Other projects for this area will be determined by 4Q FY 2012			
Accomplishments/Planned Programs Subtotals	9.567	9.516	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• (BA4) PE 0603709D8Z : *Joint Robotics Program*	9.522	11.129	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• (BA5) PE 0604709D8Z : *Joint Robotics Program*	3.763	2.782	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

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 three or four technologies to TRL six and adhering to the integrated baselines with regard to cost and schedule.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	59.152	64.565	65.282	-	65.282	66.552	68.197	70.133	71.405	Continuing	Continuing
P470: *Strategic Environmental Research and Development Program (SERDP)*	59.152	64.565	65.282	-	65.282	66.552	68.197	70.133	71.405	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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	68.021	66.409	67.119	-	67.119
Current President's Budget	59.152	64.565	65.282	-	65.282
Total Adjustments	-8.869	-1.844	-1.837	-	-1.837
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.920	-			
• Congressional Reduction	-4.000	-	-	-	-
• Defense Efficiency - RSBC	-1.039	-	-	-	-
• Defense Efficiency - Contractor Support Staff	-0.446	-	-	-	-
• Economic Assumptions	-0.325	-	-	-	-
• Other Program Adjustments	-2.139	-1.844	-1.837	-	-1.837

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P470: *Strategic Environmental Research and Development Program (SERDP)*	59.152	64.565	65.282	-	65.282	66.552	68.197	70.133	71.405	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. Technologies developed by SERDP enhance military operations, improve military systems' effectiveness, enhance military training/ readiness, sustain DoD's training and test ranges and installation infrastructure, and help 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 by 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 2011	FY 2012	FY 2013
Title: Environmental Restoration	16.392	17.068	17.967
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 2011 Accomplishments:*** New research initiatives focused 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. A description of all ER projects funded in FY 2011 can be found 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 and proposals are being selected that will address the development of sustainable			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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. ***FY 2013 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.			
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 to reduce generation of UXO during live fire testing and training operations. ***FY 2011 Accomplishments:*** New research initiatives focused 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. A description of all MR projects funded in FY 2011 can be found 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. Statements of Need were released and proposals are being selected to address these issues. Details are available at www.serdp-estcp.org. ***FY 2013 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.	7.688	8.496	8.396
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 2011 Accomplishments:*** New research initiated in FY 2011 included assessing the impacts of climate change on Alaskan ecological systems; improving the understanding of the behavioral ecology of cetaceans; developing fundamental and applied science required to manage and restore forested ecosystems on Department of Defense (DoD) lands; and improving our understanding of source-sink dynamics	19.698	21.890	21.839

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
for populations of species of relevance to DoD resource managers. A description of all RC projects funded in FY 2011 can be found 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 impacts to DoD installations. Specific Statements of Need were released and proposals are being selected for funding to address these issues. Details are available at www.serdp-estcp.org. ***FY 2013 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 impacts to DoD installations.			
Title: Weapons Systems and Platforms (WP) ***Description:*** Weapons Systems and Platforms (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 2011 Accomplishments:*** New initiatives included 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. A description of all WP projects funded in FY 2011 can be found 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 to reduce future environmental liabilities and their associated costs and impacts. Specific Statements of Need were released to address the 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. ***FY 2013 Plans:***	15.374	17.111	17.080

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 to reduce future environmental liabilities and their associated costs and impacts.			
Accomplishments/Planned Programs Subtotals	59.152	64.565	65.282

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	10.710	10.310	8.403	-	8.403	8.571	8.786	9.041	9.205	Continuing	Continuing
P727: *Joint Warfighting*	10.710	10.310	8.403	-	8.403	8.571	8.786	9.041	9.205	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. In anticipation of constrained military budgets, there will be increased demand for JWP support as Combatant Commanders will be under pressure to refine their requests for supplementary capabilities.

The Joint Advanced Warfighting Program (JAWP) segment provides innovative, responsive and timely analytic support on joint capability development serving the needs of Combatant Commanders. It provides an independent source to examine potential remedies for mission capability gapsand can establish a framework for subsequent field experiments, capability demonstrations or accelerated acquisition. JAWP often represents the first effort to define alternative solutions across the range of Doctrine, Organization, Training, Material, Leadership and Personnel-Facilities. JAWP resources underwrite a small dedicated staff of civilian military operation research analysts (currently hosted by the Institute for Defense Analysis - IDA). Administered by the Joint Operations Support cell within OSD/AT&L, the JAWP conducts an annual call for inputs from Combantant Command staffs elements that formulate Capability Gap assessments and technology based initiatives . Project selection is undertaken in consulatation with the OSD staffs serving AT&L and Policy and with lements of the Joint Staff.

The balance of JWP resources are dedicated to direct support of 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. JWP resources also research and development of tools supporting joint commander analytic efforts.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	10.966	10.547	10.583	-	10.583
Current President's Budget	10.710	10.310	8.403	-	8.403
Total Adjustments	-0.256	-0.237	-2.180	-	-2.180
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.158	-0.167			
• Other Program Adjustments	-0.003	-	-2.180	-	-2.180
• Economic Assumptions	-0.056	-	-	-	-
• FFRDC	-0.039	-0.070	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P727: *Joint Warfighting*	10.710	10.310	8.403	-	8.403	8.571	8.786	9.041	9.205	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. In anticipation of constrained military budgets, there will be increased demand for JWP support as Combatant Commanders will be under pressure to refine their requests for supplementary capabilities.

The Joint Advanced Warfighting Program (JAWP) segment provides innovative, responsive and timely analytic support on joint capability development serving the needs of Combatant Commanders. It provides an independent source to examine potential remedies for mission capability gapsand can establish a framework for subsequent field experiments, capability demonstrations or accelerated acquisition. JAWP often represents the first effort to define alternative solutions across the range of Doctrine, Organization, Training, Material, Leadership and Personnel-Facilities. JAWP resources underwrite a small dedicated staff of civilian military operation research analysts (currently hosted by the Institute for Defense Analysis - IDA). Administered by the Joint Operations Support cell within OSD/AT&L, the JAWP conducts an annual call for inputs from Combantant Command staffs elements that formulate Capability Gap assessments and technology based initiatives . Project selection is undertaken in consulatation with the OSD staffs serving AT&L and Policy and with elements of the Joint Staff.

The balance of JWP resources are dedicated to direct support of 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. JWP resources also research and development of tools supporting joint commander analytic efforts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Support for Combatant Command (COCOM) Innovation Cells	5.550	4.820	4.403
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 2011 Accomplishments: FY 2011 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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
concepts. Empowered 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:*** FY 2012 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. ***FY 2013 Plans:*** FY 2013 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:*** The Joint Advanced Warfighting Program (JAWP) segment provides innovative, responsive and timely analytic support on joint capability development serving the needs of Combatant Commanders. It provides an independent source to examine potential remedies for mission capability gapsand can establish a framework for subsequent field experiments, capability demonstrations or accelerated acquisition. JAWP often represents the first effort to define alternative solutions across the range of Doctrine, Organization, Training, Material, Leadership and Personnel-Facilities. JAWP resources underwrite a small dedicated staff of civilian military operation research analysts (currently hosted by the Institute for Defense Analysis - IDA). Administered by the Joint Operations Support cell within OSD/AT&L, the JAWP conducts an annual call for inputs from Combantant Command staffs elements that formulate Capability Gap assessments and technology based initiatives . Project selection is undertaken in consulatation with the OSD staffs serving AT&L and Policy and with lements of the Joint Staff. ***FY 2011 Accomplishments:*** FY 2011 Output- The Joint Advanced Warfighting Program (JAWP) continued 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 continued 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 • Developed alternative concepts for inclusion in the Department of Defense Analytical Agenda; • Developed a counter threat finance strategy to support USNORTHCOM;	5.160	5.490	4.000

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Identified strategic lessons learned in operations with the interagency partners in Operation Unified Response; • Assessed current COCOM tools for campaign planning. ***FY 2012 Plans:*** FY 2012 Planned Output- The Joint Advanced Warfighting Program (JAWP) segment will provide innovative, responsive and timely capability development pathways and recommendations for field experiments conducted by Combatant Commands. It will providean independent source for enabling capability development suitable for joint experimentation undertaken by the joint Commands. The findings of these investigative analyses frequently explore joint capability development via experiments and prototype demonstrations leading toward potential material solutions. Projects include assessing force sufficiency gaming for Adpative Planning; a survey/analysis of models, military wargames and analysis tools in Deptment of Defense; and an analysis of field experimentation . It will enable COCOMs to do experiments in the field that addresses regional capability gaps, explores potential solutions, and improves understanding of new technologies. ***FY 2013 Plans:*** The Joint Advanced Warfighting Program (JAWP) segment will provide innovative, responsive and timely capability development pathways and recommendations for field experiments conducted by Combatant Commands. It will provide an independent source for enabling capability development suitable for joint experimentation undertaken by the joint Commands. The findings of these investigative analyses frequently explore joint capability development via experiments and prototype demonstrations leading toward potential material solutions. It will enable COCOMs to do experiments in the field that addresses regional capability gaps, explores potential solutions, and improves understanding of new technologies. 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.			
Accomplishments/Planned Programs Subtotals	10.710	10.310	8.403

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	235.209	-	-	-	-	-	-	-	-	Continuing	Continuing
P507: *High Performance Computing Modernization Program*	235.209	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

The High Performance Computing Modernization Program (HPCMP) was transferred from the Office of the Secretary of Defense to the Department of the Army in FY 2012.

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 enable 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, Mine Resistant Ambush Protected (MRAP) vehicle, 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 Improvised Explosive Devices (IED), Hurricane Katrina related flood modeling, and the 2010 Gulf oil spill migration modeling.

High Performance Computing (HPC) 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 much 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 science and technology and test and evaluation user sites via the DREN. 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

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

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.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	200.986	-	-	-	-
Current President's Budget	235.209	-	-	-	-
Total Adjustments	34.223	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.731	-			
• SBIR/STTR Transfer	-5.336	-			
• Congressional Adjustments	40.000	-	-	-	-
• Economic Assumptions	-1.227	-	-	-	-
• FFRDC	-0.885	-	-	-	-
• Other Program Adjustments	-0.060	-	-	-	-

Change Summary Explanation

The High Performance Computing Modernization Program (HPCMP) transferred from the Office of the Secretary of Defense to the Department of the Army in FY 2012.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P507: *High Performance Computing Modernization Program*	235.209	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

The High Performance Computing Modernization Program (HPCMP) transferred from the Office of the Secretary of Defense to the Department of the Army in FY 2012.

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) High Performance Computing Modernization Program (HPCMP) 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 high performance computing (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 HPCMP. 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 help drive program decisions. The integrated HPC program 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 fraction of DoD`s science and technology (S&T) and test and evaluation (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 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 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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 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 HPCMP employs state-of-the-art WAN security and strong host and user security creating a defense-in-depth security architecture.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Department of Defense Supercomputing Resource Centers (DSRCs)	127.149	-	-
Description: The program supports DSRCs 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 2011 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 initially supported in FY 2011. Steps to streamline DSRC structure reduced the number to five DSRCs in June 2011. Two DHPIs at the NAVAIR's Air Combat Environment Test and Evaluation Facility, Patuxent River, MD and at the Army Research Laboratory, Adelphi, MD were competitively awarded and fully funded in FY 2011. Two DHPIs at the AFRL-RD, Kihei, HI and at the NRL-MRY, Monterey, CA were competitively awarded and partially funded in FY 2011 will follow-on funding planned for FY 2012. 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. A program adjustment provided in the FY 2011 Appropriation was used for accelerated portal development and "green computing" projects.			
Title: Networking	36.326	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: The Defense Research and Engineering Network (DREN) provides wide area network (WAN) connectivity among the Department's science and technology and test and evaluation communities and provides the computer and network security for the HPCMP. ***FY 2011 Accomplishments:*** The DREN provided network services to link all elements of the program as well as network security and enhancements. A new DREN network services contract will be awarded FY 2011. 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. A program adjustment provided in the FY 2011 Appropriation was used for accelerated portal development and enhanced network security.			
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 with the national HPC infrastructure, including academia, industry, and other government agencies to facilitate the sharing of knowledge, tools, and expertise. ***FY 2011 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 continued to develop shared scalable applications to exploit scalable HPC assets. However, the number of institutes was adjusted as the program was re-focused. An Academic Outreach Program continued to encourage and support computational science in universities across the United States. The Programming Environments and Training effort provided 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 were completed.	71.734	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
A program adjustment provided in the FY 2011 Appropriation was used for software research to improve application performance and explore new technology.			
Accomplishments/Planned Programs Subtotals	235.209	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0902198D8Z Procurement: *Major Equipment OSD*	53.194	0.000	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	29.291	29.347	30.036	-	30.036	30.616	31.365	32.244	32.830	Continuing	Continuing
P781: *Software Engineering Institute (SEI)*	21.726	22.304	22.735	-	22.735	23.268	23.837	24.505	24.951	Continuing	Continuing
P783: *Software Producibility Initiative*	7.565	7.043	7.301	-	7.301	7.348	7.528	7.739	7.879	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, complex, 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 2013 Office of Secretary Of Defense					DATE: February 2012
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	30.910	30.424	30.881	-	30.881
Current President's Budget	29.291	29.347	30.036	-	30.036
Total Adjustments	-1.619	-1.077	-0.845	-	-0.845
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.520	-			
• SBIR/STTR Transfer	-0.820	-0.874			
• Economic Assumptions	-0.157	-	-	-	-
• FFRDC	-0.113	-	-	-	-
• Other Program Adjustments	-0.009	-0.203	-0.845	-	-0.845

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P781: *Software Engineering Institute (SEI)*	21.726	22.304	22.735	-	22.735	23.268	23.837	24.505	24.951	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 2011	FY 2012	FY 2013
Title: SOFTWARE ENGINEERING INSTITUTE (SEI) RESEARCH	-	22.304	22.735

Description: Based on recommendations from the 2010 Comprehensive Review of the SEI, P781 SEI research projects are awarded on a competitive basis across the SEI. Research projects cross-cut the FFRDC's experience base in order to advance existing SEI research initiatives and explore new technical ideas. SEI research focuses on the most significant and pervasive software challenges within the DoD such as computing for real-time and embedded-systems, multi-core programming, computing at the tactical edge, System of System architectures, cyber-security, and improving the efficiency of acquisition programs.

FY 2011 Accomplishments:

*** Based on recommendations from the 2010 Comprehensive Review of the SEI, P781 research funding will be awarded on a competitive basis across the SEI in FY 2012 and beyond. All P781 activities beginning in FY 2012, and continued thereafter, will be captured in one program title to reflect that research awards across existing SEI programs will blend personnel and efforts. ***

FY 2012 Plans:

• Accelerate delivery and reduce time, risk, and cost of software by increased adoption of software-focused life-cycle methods.
• Enable joint acquisition program decision-making and performance by modeling acquisition system dynamics.
• Explore ways to harmonize architecturally-significant business and mission goals, software quality properties, software architecture, and acquisition strategy elements prior to Milestone A, where the performance, schedule, and cost trade space are the largest.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Protect DoD enterprise systems against insider threat through socio-technical engineering. • Reduce vulnerabilities in production software systems to manageable levels through new analysis techniques by codifying secure coding patterns and automated conformance checking. • Reduce the cost of improving software assurance and reliability to DoD suppliers and acquirers by using black-box fuzz testing techniques to detect and rectify vulnerabilities. • Investigate exploratory new technology ideas in the following areas: enabling and measuring the early detection of insider threats, semantic analysis and malware code de-obfuscation. • Demonstrate new algorithms that provide for efficient delivery of reliable mission-critical capabilities in cyber-physical systems. • Develop new methods to provide assurance while quickly creating and deploying new system of systems (SoSs) from combinations of existing independent systems. • Develop architectural strategies and infrastructure practices for handheld and mobile platforms used by Warfighters at the tactical edge. Develop and use “resource-competition-inspired” approaches to elicit changing mission needs to enable efficient, mission-aware use of tactical resources. • Develop technology that supports earlier detection of architecture induced faults with the objective of measurably fewer failing tests and more effective use of finite testing resources. • Develop a tool for deciding which parts of computer code are in greatest need of improvement, and for quantifying the benefit (future cost savings) of an investment in refactoring/remodularization. • Test the benefits of probabilistically modeling program change drivers and investigate the contribution of subjective inputs provided experts who undergo domain-specific calibration training. • Seek fresh ideas and perspectives through external research collaborations.			
FY 2013 Plans: • Continue research into areas that will accelerate delivery and reduce time, risk, and cost of software by increased adoption of software-focused life-cycle methods. • Continue to investigate and apply methods to improve acquisition efficiency for software-intensive systems. • Initiate research into innovative approaches for data-intensive scalable computing and analytics. • Continue to build upon research in the Computer Network Defense, Computer Network Attack and Exploitation (CND/CN/E) mission space and transition technology solutions to DoD. • Develop new methods and mechanisms to enable trustworthy transactions in compromised systems. • Challenge the traditional notion that humans play prescribed roles in technical systems. Rather, consider that computation plays prescribed roles in social systems, hence, defining the system to support unpredictable human needs. The goal is to field socio-technical systems that are fundamentally self-adaptive. • Develop a more comprehensive program in cyber-physical systems. • Determine the applicability and limitations of agile techniques in SoS engineering for DoD settings.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Investigate the development of architecture constructs and patterns for mobile technologies to support mobile System of System end users. • Continue competitive awards for P781 funding. • Continue to seek innovative ideas and perspectives through external research collaborations.			
Title: ACQUISITION PRACTICES FOR DOD SOFTWARE INTENSIVE SYSTEMS - ACQUISITION SUPPORT PROGRAM (ASP) ***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 2011 Accomplishments:*** • Extended the SEI Acquisition Excellence Knowledge Base to include performance metrics and explore opportunities to collaborate with system integrator practitioners and other DoD knowledge centers. • Researched and identify common reasons for software system acquisition failure and disseminate findings to DoD acquisition programs. • Developed new courseware, publications, and collaboration venues to disseminate knowledge and best practices to DoD acquisition programs. • Created 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:*** *** Based on recommendations from the 2010 Comprehensive Review of the SEI, P781 research funding will be awarded on a competitive basis across the SEI in FY 2012 and beyond. All P781 activities beginning in FY 2012, and continued thereafter, will be captured in one program title to reflect that research awards across existing SEI programs will blend personnel and efforts. *** ***FY 2013 Plans:*** *** Based on recommendations from the 2010 Comprehensive Review of the SEI, P781 research funding will be awarded on a competitive basis across the SEI in FY 2012 and beyond. All P781 activities beginning in FY 2012, and continued thereafter, will be captured in one program title to reflect that research awards across existing SEI programs will blend personnel and efforts. ***	1.735	-	-
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	4.831	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 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 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 2011 Accomplishments:*** • Explored emerging software and hardware-based approaches for establishing trusted transactions to significantly improve networked systems security and enterprise resiliency. • Provided a proof-of-concept demonstration of trusted application operations in a known compromised environment. • Developed secure coding standards for mission-critical software-reliant acquisition and development for the C++ and Java programming languages and transitioned to international standards bodies. • Developed and piloted a prototype Secure Mission Assurance Diagnostic Method and software security measures identification method. • Developed and piloted a framework and new metrics for measuring resiliency in mission-critical software-reliant networked systems. • Developed system dynamics models of insider threat based on findings from the analysis of actual cases and began to develop a prototype for DoD and other government and private sector organizations to measure insider threat risk based on exposure. • Investigate scalable search-and-retrieval techniques and fuzzy hashing techniques that detect and analyze malware more effectively. ***FY 2012 Plans:*** *** Based on recommendations from the 2010 Comprehensive Review of the SEI, P781 research funding will be awarded on a competitive basis across the SEI in FY 2012 and beyond. All P781 activities beginning in FY 2012, and continued thereafter, will be captured in one program title to reflect that research awards across existing SEI programs will blend personnel and efforts. *** ***FY 2013 Plans:*** *** Based on recommendations from the 2010 Comprehensive Review of the SEI, P781 research funding will be awarded on a competitive basis across the SEI in FY 2012 and beyond. All P781 activities beginning in FY 2012, and continued thereafter, will be captured in one program title to reflect that research awards across existing SEI programs will blend personnel and efforts. ***			
Title: SOFTWARE ENGINEERING TECHNICAL PRACTICES – RESEARCH, TECHNOLOGY, AND SYSTEM SOLUTIONS PROGRAM (RTSS)	13.728	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

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 2011 Accomplishments:

• Developed a reliability framework, new scheduling algorithms for real-time multi-core platforms, architecture-based testing strategies, and scalable static analysis capabilities that are designed for use in mission-critical software-reliant acquisition systems.
• Developed an initial version of architecture practices and a related measurement framework for improving incremental and iterative agile development of large-scale systems.
• Demonstrated the synergistic use of quantitative and qualitative methods for large-scale system design, analysis, construction, and evolution.
• Investigated bio-inspired amorphous computing models to simulate the socio-technical behavior of ultra-large-scale systems.
• Developed principles for determining which assurance activities and arguments contribute most to obtaining justified confidence in mission-critical software-reliant acquisition system behavior.
• Developed an approach to reclaim unused resources and use them to optimize utility of mission-critical tasks while preserving timing guarantees of safety-critical tasks.
• Created an analysis model incorporating architecture quality metrics to optimize the value of delivered capabilities during incremental software development.
• Defined principles for the successful use of cloud computing, service and infrastructure versioning, context-aware applications, and other emerging SoS technologies in DoD SoS implementations.

FY 2012 Plans:

*** Based on recommendations from the 2010 Comprehensive Review of the SEI, P781 research funding will be awarded on a competitive basis across the SEI in FY 2012 and beyond. All P781 activities beginning in FY 2012, and continued thereafter, will be captured in one program title to reflect that research awards across existing SEI programs will blend personnel and efforts. ***

FY 2013 Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
*** Based on recommendations from the 2010 Comprehensive Review of the SEI, P781 research funding will be awarded on a competitive basis across the SEI in FY 2012 and beyond. All P781 activities beginning in FY 2012, and continued thereafter, will be captured in one program title to reflect that research awards across existing SEI programs will blend personnel and efforts. ***			
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 (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 2011 Accomplishments:*** • Investigated the efficacy of various statistical and probabilistic algorithms for automatically identifying data anomalies in program reports to OSD. • Developed a new approach to early life cycle cost estimation that incorporates the use of scenario elicitation to identify likely as well as unlikely program execution paths, modeling these scenarios in a Bayesian Belief Network, and using existing cost estimation models to produce a distribution of program costs. ***FY 2012 Plans:*** *** SEPM is not expected to compete for P781 funding in FY 2012 and beyond. *** ***FY 2013 Plans:*** *** SEPM is not expected to compete for P781 funding in FY 2012 and beyond. ***	1.432	-	-
Accomplishments/Planned Programs Subtotals	21.726	22.304	22.735

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*

D. Acquisition Strategy

N/A

E. Performance Metrics

• Transition of tools and practices for use in DoD programs of record and to the Defense Industrial Base (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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P783: *Software Producibility Initiative*	7.565	7.043	7.301	-	7.301	7.348	7.528	7.739	7.879	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 Technology from Non-Traditional Sources (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 2011	FY 2012	FY 2013
Title: SOFTWARE PRODUCIBILITY INITIATIVE	3.177	7.043	7.301
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), Space and Naval Warfare Center (SPAWAR), and the Air Force Research Laboratory (AFRL), as well as university and industry collaborators.			
FY 2011 Accomplishments: • Created a tool to aid analysts in performing quality assurance and vulnerability testing of binary code, allowing for the discovery of errors and weaknesses in very large and complex software that is unreadable by humans. • Together with the research community, successfully co-developed content, including 42 challenge problems, for the software engineering collaboration environment.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Demonstrated an open architecture to facilitate the re-use of code on different processors to make upgrades easier and allow processors from different manufacturers to be more readily used in the same application. This open architecture has been adopted by initial DoD users. • Performed a use-case demonstration of a graphical drag-and-drop, scalable, software development framework to show collaborative and efficient design, development, test, evaluation, and optimization of complex systems. • ARL completed a new Cooperative Research Agreement with the University of California, Berkeley to develop and demonstrate techniques supporting model-based design of complex, heterogeneous, software-intensive systems. The project developed and published the theory in the form of one text book, numerous papers, keynotes, and invited talks and began the software implementation of the theory in mid 2011. • Developed a way to accelerate an existing technique that guarantees synchronous behavior in different parts of a system. This method has the potential to improve the safety and reliability of systems like autonomous vehicles and aircraft.			
FY 2012 Plans: • Continue the development of the software engineering collaboration environment. Increase the number of challenge problems and their difficulty. Continue to engage existing users and attract new users. Identify opportunities for transition in FY2013. • Demonstrate to the DoD software community the binary code analysis tool developed by CERDEC that combines code reverse engineering with code visualization. • Assess the effectiveness of the accelerated synchronous behavior technique in representative systems and identify potential DoD users. • Demonstrate the effectiveness of graphical drag-and-drop, scalable, software development framework with a DoD research activity directly supporting the Warfigher. • Explore model-based design of scalable systems of systems that will allow the scaling-up of model-based design. • Improve the design and development of complex systems, including combining multiple models, programming and efficiently using multi-core computers, and software for real-time embedded systems and cyber-physical systems.			
FY 2013 Plans: • Continue the development of the software engineering collaboration environment. Increase the number of challenge problems and their difficulty. Continue to engage existing users and attract new users. Identify opportunities for transition in FY2013. • Demonstrate to the DoD software community the binary code analysis tool developed by CERDEC that combines code reverse engineering with code visualization. • Assess the effectiveness of the accelerated synchronous behavior technique in representative systems and identify potential DoD users. • Demonstrate the effectiveness of graphical drag-and-drop, scalable, software development framework with a DoD research activity directly supporting the Warfigher. • Explore model-based design of scalable systems of systems that will allow the scaling-up of model-based design.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Improve the design and development of complex systems, including combining multiple models, programming and efficiently using multi-core computers, and software for real-time embedded systems and cyber-physical systems.			
Title: TECHNOLOGY FROM NON-TRADITIONAL SOURCES (TNTS) INITIATIVE	4.388	-	-
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, Air Force Materiel Command Electronic Systems Center (AFMC ESC), CERDEC, SPAWAR, and U.S. Marine Corps. ***FY 2011 Accomplishments:*** • Conducted thorough technical reviews of 177 companies with innovative and emerging products that could be used for technology forecasting for Office of the Assistant Secretary of Defense Research and Engineering ASD(R&E), and energy efficiencies for the Department of the Navy. Also conducted workshops for NASA's Johnson Space Center to assist in medical, nutrition, and command and control of space flights. • Provided experimentation funding to the Department of the Navy and USMC Expeditionary Energy office for the evaluation of 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. *** ***FY 2013 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	7.565	7.043	7.301

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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

- 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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	58.763	58.970	107.002	-	107.002	88.155	115.628	119.125	121.381	Continuing	Continuing
P826: *Quick Reaction Fund*	20.451	15.883	37.902	-	37.902	27.308	49.637	51.986	54.032	Continuing	Continuing
P828: *Rapid Reaction Fund*	38.312	30.950	55.054	-	55.054	47.151	51.705	52.307	52.126	Continuing	Continuing
P830: *RDT&E Architecture and Integration*	-	10.403	10.316	-	10.316	10.040	10.496	10.817	11.106	Continuing	Continuing
P831: *Joint Rapid Acquisition Cell Support*	-	1.734	1.760	-	1.760	1.756	1.860	2.055	2.117	Continuing	Continuing
P833: *Strategic Multi-Layered Assessment (SMA) Support*	-	-	1.970	-	1.970	1.900	1.930	1.960	2.000	Continuing	Continuing

Note

In FY 2013, the Strategic Multi-Layered Assessment (SMA) project (P833) was inserted as a result of a functional transfer of resources and mission from United States Strategic Command (STRATCOM).

The program increase from FY 2012 to FY 2013 is attributable to two major factors.

In FY 2013, $16.000 million has been allocated to two new focal areas, within P828, related to Combatant Commanders, DoD and other Government Agencies concerns and requirements. The new focal area “Biometrics and Forensics” has been allocated $11.000 million to resource emerging technologies as DoD seeks to attribute enemy activity to specific individuals. The new focal area “Urban Characterization” has been allocated $5.000 million to resource development of intelligence, surveillance and reconnaissance (ISR), electronic warfare, kinetic and other capabilities needed for future military operations in a wide range of urban areas.

The remaining factor relative to the FY 2012 to FY 2013 increase reflects the restoral to baseline of a FY 2012 budget reduction and DoD's continued emphasis on QRSP's proven ability to expedite development and transition of new technologies to the warfighter.

A. Mission Description and Budget Item Justification

The QRSP Program supports five separate projects that provide rapid funding to expedite development and transition of new technologies to the warfighter. The projects that are part of the QRSP are the Quick Reaction Fund (QRF), the Rapid Reaction Fund (RRF), the RDT&E Architecture and Integration (RAI) program, Joint Rapid Acquisition Cell (JRAC) support, and Strategic Multi-Layered Assessment (SMA) support. 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.

P826: Projects supported by Quick Reaction Funds (QRF) focus on responding to emergent conventional warfare needs during the execution years that take advantage of breakthroughs in rapidly evolving technologies. Examples of the types of projects that are envisioned include: force protection projects to enhance anti-

access and area denial capabilities, and broad electronic warfare capabilities. QRF focuses on maturing technologies critically needed for the combatant commands and produces prototypes or demonstrates capabilities for evaluation within 12 months.

P828: The Rapid Reaction 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 RRF is executed by the Rapid Reaction Technology Office (RRTO). RRTO works to anticipate adversaries' exploitation of new technologies and advanced capabilities and develop counters to those capabilities. Additionally, the office works to leverage technology developed outside of DOD in the commercial sector, academia, international arenas and small, non-traditional businesses to expose them to specific DoD needs areas as identified by Combatant Commanders, Military Service organizations and other Defense Agencies and interagency organizations. The typical length of an RRTO program falls within a six to twelve month range in order to more effectively aid the warfighter. RRF consistently exceeds the transition objective of 30 percent for demonstration programs (DOD Strategic Objective 4-3).

P830: The RDT&E Architecture and Integration program objectives are to enhance and expand Yuma Proving Grounds rapid technology assessment capability in general and to enhance the Joint Experimentation Range Complexes (JERCs) venue in particular. This include: improving the broad-spectrum of evaluations to include analysis of a cohesive Forward Operating Base (FOB) defensive architecture; emerging homemade explosives (HME); future Improvised Explosive Devices (IEDs); counter IED capability development; and, characterization of evolving electro-magnetic environments. These focal align under the Quadrennial Defense Review (QDR) focal area “Institutionalizing Rapid Acquisition Capability” and its third tenant “Assessing Alternatives and Executing a Solution (Acquisition).”

P831: 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 Combatant Command (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.

P833: The objective of the Strategic Multi-Layered Assessment (SMA) Cell is to support all COCOMs, Joint Force Commanders and all other government agencies by assessing complex operational/technical challenges which require multi-agency and multi-disciplinary approaches. With input from across the United States Government, academia and the private sector, the SMA cell develops solution options to COCOM generated challenging problems and informs the command’s senior leadership. Each SMA effort is initiated at the request of senior COCOM leadership. Products are typically produced within six months and directly contribute to the decision making process of COCOM’s senior leaders.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	78.244	89.925	103.089	-	103.089
Current President's Budget	58.763	58.970	107.002	-	107.002
Total Adjustments	-19.481	-30.955	3.913	-	3.913
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.235	-1.389			
• Baseline Adjustments	-	-	3.913	-	3.913
• Congressional Adjustments	-17.720	-29.160	-	-	-
• Economic Assumptions	-0.296	-	-	-	-
• FFRDC	-0.213	-0.406	-	-	-
• Other Program Adjustments	-0.017	-	-	-	-

Change Summary Explanation

In FY 2013, the Strategic Multi-Layered Assessment (SMA)) project (P833) was inserted as a result of a functional transfer of resources and mission from United States Strategic Command (STRATCOM). In FY 2012, two new project codes were created to reflect DOD priorities (P830 – RDT&E Architecture and Integration, and P831 – Joint Rapid Acquisition Cell Support.

Baseline Adjustment. ASD(R&E) baseline adjustments reflective of DoD priorities and requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P826: *Quick Reaction Fund*	20.451	15.883	37.902	-	37.902	27.308	49.637	51.986	54.032	Continuing	Continuing

Note

The FY 2012 to FY 2013 increase reflects the restoral to baseline of a FY 2012 budget reduction and continued DoD emphasis on QRF's ability to address conventional, disruptive, catastrophic, and irregular threats.

A. Mission Description and Budget Item Justification

The Quick Reaction Special Projects (QRSP) Program supports five 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.

Projects supported by Quick Reaction Funds (QRF) focus on responding to emergent conventional warfare needs during the execution years that take advantage of breakthroughs in rapidly evolving technologies. Examples of the types of projects that are envisioned include: force protection projects to enhance anti-access and area denial capabilities, and broad electronic warfare capabilities. QRF focuses on maturing technologies critically need for the combatant commands and produces prototypes or demonstrates capabilities for evaluation within 12 months.

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 have immediate impact on military operations. It should be noted that QRF initiatives are limited to those that will deliver a military operational prototype application within twelve months of being funded.

The QRF program focuses on projects that have the potential to address conventional, disruptive, catastrophic, and irregular threats. More specifically, initiatives that address the following interest areas: Anti-Access/Area Denial, Base Protection; Electromagnetic Bandwidth and Spectrum Enhancement; Persistent Intelligence, Surveillance, and Reconnaissance (ISR); Newly Emerging National Threats; Directed Energy Capabilities; Low-Cost Precision Engagement Capabilities; Operational Field Demonstrations; Unmanned and Robotics Systems; Over the Horizon-Radar Technologies; and Counter-Electronic Warfare Technologies.

In FY 2012 and FY 2013 QRF 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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: S150 Fuel Cell Charging System	2.000	-	-
Description: This project addressed the need for portable battery chargers sized for small squad operation, and advanced the state of technology of the S125 battery charging system to Technical Readiness Level (TRL) seven. This effort culminated in a robust, lightweight system capable of charging military batteries from a liquid fuel source. The performer developed a 150-Watt			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
portable generator based on solid oxide fuel cells. This generator used 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 six kilogram (14 pounds), the battery charger-based system fits within a backpack, saves 60 percent of the weight of current solutions, and saves more than 80 percent of the weight of primary batteries. ***FY 2011 Accomplishments:*** Four Solid Oxide Fuel Cell (SOFC) Systems were designed, manufactured, tested and delivered. The in-process reports and a final report have been completed.			
Title: Afghanistan Micro-grid Project (AMP) (Formerly Prototype Operations Warfare Energy Efficiency and Reduction Demonstration (POWERED) ***Description:*** This project installed and is assessing "micro-grid" power distribution technology in the Afghanistan Area Of Responsibility (AOR). AMP is validating the utility of micro-grids in a relevant operational environment, scientifically demonstrating a reduction of DOD Fossil Fuel consumption, establishing a verifiable business case analysis for micro-grid technology, developing specifications for standardized micro-grids, identifying relevant standards/interfaces, and facilitating Logistics Civil Augmentation Program (LOGCAP) contract language for micro-grid technology. ***FY 2011 Accomplishments:*** Integration of a one-megawatt (MW) micro-grid into a battalion-sized Forward Operating Base (FOB). The AMP micro-grid continues to provide relevant energy savings data in FY 2012.	1.750	-	-
Title: Air-to-Air Combat Engagement ***Description:*** The project focused on mitigating losses due to the effect of Electronic Warfare (EW) in the air-to-air engagement. Laboratory, ground based and air-to-air testing was included in the effort. Information resulting from this effort informed decision makers on the art of the possible, with the first technical data arriving 30 days after commencement of effort. ***FY 2011 Accomplishments:*** This project identified a vulnerability where near peer target systems can be significantly degraded. Technical data derived from this project has directly supported development of improvements to our defensive capabilities. Additional details of this project are classified.	0.379	-	-
Title: Interruption of Wide Area Sensing Capabilities (IWAS)	1.250	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: This project developed an electronic attack (EA) technique effective against wide-area surveillance sensors to disrupt the adversary's kill chain. A phased program plan began with a feasibility demonstration and culminated with the development and demonstration of a full-scale deployable prototype. ***FY 2011 Accomplishments:*** This project demonstrated concept feasibility to include modeling and simulation, validated by basic measurements using primarily existing equipment. Additional details of IWAS are classified.			
Title: Chimera ***Description:*** This project developed a special electronics payload to be deployed on two different platforms that addressed classified requirements. ***FY 2011 Accomplishments:*** Completed Stability Analysis Report and developed and delivered Prototype Platform one with payload. Additional details of Chimera are classified.	3.200	-	-
Title: Air Ship Technologies ***Description:*** Pelican is a hybrid airship that will be able to vertically land and take off at maximum gross weight. Additionally, it will be a heavier than air vehicle during ground operations. This makes Pelican unique among existing airships or other hybrid airships in development. This project will assist in the acceleration of the Pelican flight demonstration, moving its planned execution from late FY 2013 to late FY 2012. ***FY 2011 Accomplishments:*** Completion of internal skeleton and accelerated development and application of external skin to facilitate a late FY 2012 flight demonstration.	2.722	-	-
Title: P621 ***Description:*** This project provides improvement and demonstration of an end-to-end collection system designed to address information needs that are either not being addressed or have limited collection resources assigned due to target attributes such as complexity, location, operating characteristics or operating regime. The P-621 system will include a self-contained Tasking, Collection, Processing, Exploitation and Dissemination (TCPED) capability that will demonstrate a limited operational capability to support COCOM and Intelligence Community (IC) customers. The details of this project are classified. ***FY 2011 Accomplishments:***	3.000	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Accomplished a demonstration of a new, multi-mission capability for use by deployed forces in a COCOM theater of operations to address a wide range of collection needs.			
Title: Macy (Black Dart) ***Description:*** This project enabled the assessment of current and near-term counter-unmanned air system (UAS) capabilities in a littoral and maritime environment, and supported the development and assessment of associated tactics, techniques, and procedures (TTPs). The specific target set addressed by the Macy project is classified. ***FY 2011 Accomplishments:*** Current and near-term counter-UAS capabilities in a littoral and maritime environment were assessed. TTP's were developed and passed to operational users.	0.900	-	-
Title: IMAGNAV ***Description:*** This project accelerated the maturation of technology for insertion into the Tomahawk cruise missile. Key technology developed by this project was an optical sensor to conduct Tomahawk flight trials and mission planning/data reduction software. ***FY 2011 Accomplishments:*** The project facilitated a six month reduction in program development time, produced a more robust flight data set and delivered data reduction software to support future tests. This project transitions to Navy in FY 2012.	2.000	-	-
Title: Counter Radio-Controlled Improvised Explosive Device Electronic Warfare (CREW) Comparative Test ***Description:*** This project will conduct comparative performance tests of Navy JCREW 3.3 and Army Dule Technology Insertion (DTI) CREW mounted systems to inform the Office of the Secreatry of Defense (OSD) Program Reviews. ***FY 2011 Accomplishments:*** This project facilitated the OSD decision-making process by providing comparative test data on the competing duplicative programs.	0.750	-	-
Title: BEAST Pod ***Description:*** Developed an advanced electronic attack (EA) pod for captive carriage on U.S. tactical aircraft platforms. The pod provides operator training in advanced threat environments and supports the development of counter-EA Techniques, Tactics, and Procedures (TTPs). In addition, the pod provides an advanced capability test asset for use in developing radar Electronic Protection algorithms for developmental and existing radar programs.	1.750	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: This project delivered an advanced capability electronic EA pod for use on tactical aircraft to support training and developmental radar programs. The pod utilized government laboratory developed Digital RF Memory (DRFM) EA technologies designed to counter late-generation phased array radars. The jamming payload was packaged within the shell of the AIM-120 Advanced Medium range Air-to-Air Missile (AMRAAM) body. It maintains the outer mold line and mass properties of the existing AIM-120 to allow rapid flight certification on a wide variety of tactical aircraft.			
Title: Air/Event Information Sharing Service (A/EISS) ***Description:*** Project produced and shared actionable air event decision support data and visualization track data for Operation NOBLE EAGLE Engagement Authorities, US and Canadian senior leaders, and all mission partners. It provided accurate and timely debriefs via event capture and record capability and provided the same data, and the same picture, at the same time – fixed or mobile. ***FY 2011 Accomplishments:*** A/EISS provided critical near-real time decision support information to Air Defense and Security mission partners, US and Canadian senior leaders, and Operation NOBLE EAGLE Engagement Authorities responsible for civilian aircraft shoot-down decisions over North America. Air web applications (web apps) accessible from web browsers and mobile devices enable joint, interagency, intergovernmental, and multinational (JIIM) partners to consume data from new and emerging Enterprise Services and to produce and share critical decision information with all mission partners, whether fixed or on the move. A/EISS assists DOD in establishing web app technical standards and provided a cost-effective alternative to heavy client/server applications currently in use.	0.750	-	-
Title: Anti-Access/Area Denial ***Description:*** Focus area for FY 2012 and FY 2013 QRF Anti-Access Area Denial - new project starts include efforts to develop capabilities in anticipation of emerging needs to mitigate losses due to the effect of Electronic Warfare (EW) in the air-to-air engagement. 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 2012 Plans:*** Anti-Access/Area Denial 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, Federally Funded Research and Development Centers (FFRDCs), other	-	6.483	11.251

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
government agencies, industry and academia will help identify areas critical to developing future anti-access/area denial technological enhancement efforts. ***FY 2013 Plans:*** As emerging requirements and threats within the Anti-Access/Area Denial focal area surface, programmatic and investment decisions will be resourced to respond to Combatant Commanders, Services and other government organizations requirements.			
Title: Electromagnetic Bandwidth and Spectrum Enhancement ***Description:*** Focus areas for FY 2012 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 2012 Plans:*** Electromagnetic Bandwidth and Spectrum Enhancement 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, 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 2013 Plans:*** As emerging requirements, threats and opportunities within the Electromagnetic Bandwidth and Spectrum Enhancement focal area surface, programmatic and investment decisions will be resourced to respond to Combatant Commanders, Services and other government organizations requirements.	-	1.500	5.548
Title: Directed Energy Capabilities ***Description:*** Focus areas for FY 2012 and FY 2013 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 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 2012 Plans:***	-	2.700	7.048

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Directed Energy Capabilities 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. ***FY 2013 Plans:*** As emerging requirements, threats and opportunities within the Directed Energy Capabilities focal area surface, programmatic and investment decisions will be resourced to respond to Combatant Commanders, Services and other government organizations.			
Title: Low Cost Precision Engagement Capabilities ***Description:*** Focus area for FY 2012 and FY 2013 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. Rapid Reaction Technology Office (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 2012 Plans:*** Low Cost Precision Engagement Capabilities 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 Low Cost Precision Engagement Capabilities efforts. ***FY 2013 Plans:*** As emerging requirements, threats and opportunities within the Low Cost Precision Engagement Capabilities focal area surface, programmatic and investment decisions will be resourced to respond to Combatant Commanders, Services and other government organizations.	-	2.700	6.904
Title: Operational Field Demonstrations ***Description:*** Focus area for FY 2012 and FY 2013 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. Rapid Reaction Technology Office (RRTO) will ensure QRF efforts are not duplicative with other Operational Field Demonstrations efforts and will seek to leverage other such efforts.	-	2.500	7.151

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2012 Plans: Operational Field Demonstrations 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. ***FY 2013 Plans:*** As emerging requirements, threats and opportunities within the Operational Field Demonstrations focal area surface, programmatic and investment decisions will be resourced to respond to Combatant Commanders, Services and other government organizations.			
Accomplishments/Planned Programs Subtotals	20.451	15.883	37.902

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

The QRF Program provided funding to twelve projects in FY 2011. Although each project is unique, all QRF projects were monitored for schedule deviation and transition outcome, as well as for meeting reporting requirements. Additionally, some projects were monitored for the delivery of additional deliverables, such as test reports, studies, components, and equipment. Generic performance metrics applicable to the Quick Reaction Fund (QRF) includes attainment of DOD Strategic Objective 4-2D. The title of this objective is "Speed Technology Transition Focused on Warfighting Needs" and the metrics for this objective is to transition 30 percent of completing demonstrations program per year. For projects that were completed in FY 2011, the QRF achieved a transition rate of approximately 60 percent.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P828: *Rapid Reaction Fund*	38.312	30.950	55.054	-	55.054	47.151	51.705	52.307	52.126	Continuing	Continuing

Note

In FY 2013, the RRF reflects the addition of two new focal areas related to Combatant Commanders, DoD and other Government Agencies concerns and requirements. The new focal area “Biometrics and Forensics” has been allocated $11.000 million to resource emerging technologies as the department seeks to attribute enemy activity to specific individuals. The new focal area “Urban Characterization” has been allocated $5.000 million to resource development of intelligence, surveillance and reconnaissance (ISR), electronic warfare, kinetic and other capabilities needed for future military operations in a wide range of urban areas.

The FY 2012 to FY 2013 increase reflects the above new focal areas, a restoral to baseline of a FY 2012 budget reduction, and DoD emphasis on RRF's ability to address and anticipate adversaries' exploitation of new technologies and develop counters to those capabilities.

A. Mission Description and Budget Item Justification

The Quick Reaction Special Projects Program (QRSP) (Program Element 0603826D8Z) supports five 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) (Project P828) is fully executed through the Rapid Reaction Technology Office (RRTO). The RRTO 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. 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 innovation outreach cell that is facilitating better interactions with small companies with emerging technologies that do not normally do business with the DoD. In FY 2012 and FY 2013, 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 the Assistant Secretary of Defense (Research and Engineering) (ASD(R&E)) goals. With project selection occurring during the execution year, potential focus areas for FY 2012 and FY 2013 Rapid Reaction Technology Office projects include: Forward Operating Base (FOB) protection; persistent Intelligence, Surveillance, and Reconnaissance (ISR) architecture; ISR sensors; interface of law enforcement and military operations; biometrics and forensics; autonomous operations; data processing, exploitation and dissemination (PED); cyber security; exploitation of new and emerging cell phone technologies; support to 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 typical length of a RRTO project falls within a six to twelve month range in order to more effectively aid the Warfighter.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Title: Submerged Launch System for a Fuel Cell Powered Long Endurance Expendable Unmanned Aerial System (UAS) for Intelligence, Surveillance, and Reconnaissance (ISR) ***Description:*** This project developed a fuel cell powered long endurance UAS for ISR. The UAS is capable of being launched from a submerged submarine. ***FY 2011 Accomplishments:*** Fully autonomous Electrically Assisted Take Off launch of UAV; launcher system design/build; launcher system pond test; in water pre-demo flight tests. Submerged launch test planned for 1Q FY 2012.	0.550	-	-
Title: Inflatable Satellite Communications (SATCOM) Antenna ***Description:*** This project developed a lightweight, portable SATCOM antenna for use with the Support Wide Area Network (SWAN) SATCOM Terminals. The portable antennas can replace the current rigid 1.2 meter and 1.8 meter antennas. Inflatable SATCOM antennas pack smaller and have a larger aperture that enables increased data throughput to include Full Motion Video. ***FY 2011 Accomplishments:*** Developed X-band tracking capability for the SATCOM terminals. Obtained Army Strategic Command certification of the X and Ka Band terminal. Produced technical manuals and training materials.	0.720	-	-
Title: Advanced Architectures ***Description:*** This project provided 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 Intelligence, Surveillance, and Reconnaissance (ISR) related systems generate globally in a rapid, relatively low cost, secure and open systems manner. ***FY 2011 Accomplishments:*** Delivered a Strategic Issues Report and enhanced capabilities descriptions. ***FY 2012 Plans:*** Continuing efforts to expand an advanced architecture enabling multiple DOD ISR initiatives to achieve a strategic level of significance by providing cohesion across initiative issues and describing the aspects of successful approaches to development.	0.250	0.100	-
Title: Advanced Imaging and Multifunction Sensing System (AIMS) ***Description:*** This effort developed an advanced multifunction sensor that can provide revolutionary sensing and imaging capabilities. The effort significantly expands the capability of current systems by adapting and applying recent advances in ultra-	0.474	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
wideband optical waveform technology and developing new device technologies to greatly expand the operational utility of Laser Detection & Ranging systems. ***FY 2011 Accomplishments:*** Integrated the system aboard a manned aircraft and demonstrated the capability at tactically significant ranges. Successfully collected 2-dimensional ISAL imagery with 1-mm resolution on both man-made targets and on human faces. Currently completing characterization of improved retro-reflective sensors. Pursuing transition opportunities within the intelligence community.			
Title: Strategic Multi-Layer Assessment (SMA): Deterring Violent Extremist Organizations (VEO) ***Description:*** In direct support of Combatant Commander senior leadership Strategic Multi-Layer Assessment (SMA) employs research and analysis techniques to develop a context and strategy for determining future deterrence options against Violent Extremist Organizations (VEO). ***FY 2011 Accomplishments:*** Conducted theoretical review and case study of deterring violent extremists. Modeled development of a conceptual VEO deterrence model. Used the VEO deterrence model to test the performance of the framework via additional exercise scenarios and roundtable workshops. Further project details are classified based on the results of the case study to inform construction.	2.500	-	-
Title: Technology Assessments at Yuma Proving Grounds (YPG) ***Description:*** The Joint Experimental Range Complex (JERC) is a remote test site located at the YPG 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, Rapid Reaction Technology Office (RRTO) has sponsored evaluation of more than 275 systems at the JERC. This funding is utilized to provide emergent upgrades and capabilities to the site. ***FY 2011 Accomplishments:*** Sponsored six two-weeks evaluation periods for interested industry and government representatives to test emerging capabilities in a realistic desert environment. Evaluated 14 technologies during these test periods. Used the results of these evaluations to inform the development/procurement process for future enhanced capabilities. ***FY 2012 Plans:*** Continuation of the five to six two-weeks 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.	2.000	1.780	-
Title: Covert Modulating Retroreflector (CMR) for High Speed Asymmetric Lasercom	0.800	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: This effort provided a high speed covert laser data link capable of transmitting live, high quality video and other data. This program built on the successes of previous Rapid Reaction Fund (RRF) modulating retroreflector lasercom efforts and will incorporate the downlink capability aboard a small Unmanned Aerial Vehicle (UAV). ***FY 2011 Accomplishments:*** Conducted a successful demonstration of data link. This technology is transitioning to a classified user.			
Title: Hostile Fire Detection System (HFDS) – High Speed ***Description:*** This project developed a high speed infrared imaging system designed to identify the accurate location of a small arms shooter with a reduced number of false alarms. This project utilized a sensor developed for space operations and adapted it to detect ground based events. ***FY 2011 Accomplishments:*** The project developed three hardened prototypes for an operational demonstration. Test and evaluation with US Army (G-2) planned for early FY 2012.	1.500	-	-
Title: APEX and ASPEN ***Description:*** These two projects addressed 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, these projects provided DOD the technical underpinnings required to address the evolving communications environment. Details of the outcomes of this research are classified. ***FY 2011 Accomplishments:*** The projects delivered communications protocol information that is being used by the operational community of interest. Further project details are classified.	1.975	-	-
Title: Wide Area Chemical Sensing ***Description:*** This project developed 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 2011 Accomplishments:***	0.800	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Developed the pointing mirror control system, conducted flight readiness review, conducted air-to-ground local demonstration, and a remote field test of the completed system. Representatives from United States Southern Command (USSOUTHCOM) express strong support for the program and possible transition.			
Title: Synthetic Aperture Radar (SAR) Coherent Change Detection (CCD) for Thunderstorm ***Description:*** Participation of tactical, near real time SAR CCD capability in Thunderstorm Spiral 4 exercise. SAR/CCD utilizes complex algorithms to detect minute changes in terrain, infrastructure, troop movement, and other objects over time in imagery gleaned from two passes over the same path by a synthetic aperture radar. ***FY 2011 Accomplishments:*** Participation in Thunderstorm exercise, delivery of all SAR and SAR CCD data collected to operational users. The SAR/CCD capability will operationally deploy in mid FY 2012.	0.500	-	-
Title: FLASH 3-D Light Detection and Ranging (LIDAR) ***Description:*** This project field demonstrated real-time, full motion 3-dimensional imaging for the warfighter from an airborne LIDAR system. ***FY 2011 Accomplishments:*** Conducted a flight demonstration for operational users. Proved capability to provide geo-referenced, orthorectified 3-dimensional stitched images in near real time. This project will continue to exploring transition opportunities with US Army Special Operations, and the Intelligence, Surveillance, and Reconnaissance (ISR) Task Force.	0.300	-	-
Title: Motion Imagery Synthetic Aperture Radar ***Description:*** This project demonstrated adding a millimeter wave (MMW) radar capability to an electro-optic and infrared camera-ball system. Data fusion of the complementary optical and radar images enhance detection and information extraction while co-registration improves long range geo-location accuracy. MMW capability will enhance foliage, fog, and weather penetration and facilitate the ability to detect changes in a given field of view. ***FY 2011 Accomplishments:*** Designed an engineering prototype capability, mounting the sensors in the camera ball on a turret, and developed a data collection system with a real time processing capability. Flight demonstration is planned for 2Q FY2012.	1.000	-	-
Title: Instant Eye ***Description:*** Semi-autonomous small Unmanned Aerial System (UAS) designed to support the individual soldier by providing instantaneous overhead video surveillance on demand. Once launched, InstantEye will provide a live Electro-Optical/Infra-Red	1.000	1.100	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
video feed for up to 20 minutes. The vehicle's small size and quiet propulsion system make it inaudible at 30 feet and visually indistinguishable at 50 feet. ***FY 2011 Accomplishments:*** Completed the design and development of the MK-2 Instant Eye system; delivered 20 Instant Eye MK-2 prototypes and five ground stations. ***FY 2012 Plans:*** Complete the design and development of the MK-3 Instant Eye system with semi-autonomous control; deliver MK-3 Instant Eye prototypes for operational evaluation.			
Title: Qualitative Data Collection Strategy for Africa ***Description:*** The objective of this task was to design a qualitative data collection plan that will service the needs of the modeling & simulation community and users of computational models relating to Africa, while ensuring that data requirements are attuned to the interests of African partners. ***FY 2011 Accomplishments:*** Developed summary report of United States government modeling and simulation activities and summary report of African qualitative data requirements; provided qualitative data collection and engagement strategy for the way ahead to US Africa Command (AFRICOM).	0.500	-	-
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 were summarized and linked to earlier studies in an existing semantic wiki database at the U.S. Naval Academy that is designed to track transnational Jihadist terrorist activities worldwide. ***FY 2011 Accomplishments:*** Produced six original case studies and circulated to interested consumers in the DOD and intelligence community. Developed two inter-related sets of findings integrated within the existing Media wiki data at the U.S. Naval Academy. Developed a new web-based Drupal Interface for accessing the wiki database and related data and research. This project produces junior naval and	0.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
marine officers trained to use state-of-the-art analytical techniques to understand and track evolving transnational illicit networks and may result in new approaches to quickly train future terrorism analysts.			
Title: Blue Team Assessments ***Description:*** This project provided inter-organizational technical support on various topics including Ground-Penetrating Radar and Synthetic Aperture Radar Coherent Change Detection capabilities. Leveraging a wide range of expertise, the project helped ensure future projects are relevant to the warfighter. ***FY 2011 Accomplishments:*** Provided technical review of proposals and submitted recommendations for development of capabilities supporting operational users. ***FY 2012 Plans:*** Reassess the evolving enemy threat then provide technical review of proposals and submit recommendations for development of capabilities supporting operational users.	0.700	0.630	-
Title: Intelligence, Surveillance, and Reconnaissance (ISR) Analysis and Architectures Support ***Description:*** The project assessed 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 was to provide information to the government to make better development, deployment and employment decisions with new ISR systems. ***FY 2011 Accomplishments:*** Assessed value of ISR systems quantitatively by analyzing their role in the architecture of systems providing end-to-end mission effectiveness. This analysis was provided to the Rapid Reaction Technology Office, the Joint Improvised Explosive Device Defeat Organization, and the Intelligence, Surveillance, and Reconnaissance (ISR) Task Force to enable a more informed understanding of the development, deployment, and employment decisions with new ISR systems.	2.190	-	-
Title: Wide Area Video Exploitation Library (WaveLib) Phase II ***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. ***FY 2011 Accomplishments:***	0.350	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Customized the WaveLib Single Target Tracker (STT) for use with the Massachusetts Institute of Technology Lincoln Lab MASIVS sensor data and the MASIVS APIX viewer for the Yellow Jacket sensor system. Enhanced and customized the WaveLib Shape File Refinement Tool for use by NGA Constant Hawk Analysts.			
Title: Air Launched Cooperative Multiple Unmanned Aerial Vehicles (UAVs) for Intelligence, Surveillance and Reconnaissance (ISR) Missions ***Description:*** The project developed 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 2011 Accomplishments:*** Delivered final heterogeneous system (five VTOL UAVs, one ground station, and cooperative technologies payloads) to an operational user; demonstrated a prototype surveillance and reconnaissance system; and developed recommended CONOPS.	0.490	-	-
Title: HADWAV ***Description:*** The Human Activity Detection in Wide Area Video (HADWAV) software tool was developed to automatically detect vehicle starts and stops within a wide area of interest (AOI), as well as human activity within the same AOI. The objective of this effort was to provide the capability to detect slow moving vehicles, two-wheelers, and people in operational full motion video imagery. ***FY 2011 Accomplishments:*** Improved HADWAV start and stop detection performance with the goal of transitioning the capability to operational cells within NGA, Counter-IED Operational Intelligence Center, and Distributed Common Ground System.	0.400	-	-
Title: FROGGER ***Description:*** Supporting Special Operations warfighters, this project leverages a state-of-the-art chip-scale radio transceiver to implement a miniaturized Tagging, Tracking, and Locating (TTL) system capable of GPS-like geolocation accuracy against stationary or moving targets in various environments including jungles and cities from air, ground, and hand-held platforms. ***FY 2011 Accomplishments:*** Delivery of prototype FROGGER TTL hardware system. Demonstration of technology planned for March 2012.	0.600	-	-
Title: SHIVA XP	0.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: This effort provided comprehensive and actionable intelligence regarding the manufacturing and storage of ammonium nitrate. SHIVA XP research supports a robust change-detection and tip-off capability for a broader range of problems, using commercial satellite sensor data and automatic algorithms. Further details of this effort are classified. ***FY 2011 Accomplishments:*** Conducted eight Applications Test Cases (ATCs) in support of United States Southern Command (USSOUTHCOM).			
Title: Persistent Surveillance Test Bed (PSTB) Automated Online Data Repository (AODR) ***Description:*** This project enabled 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, was instrumental in the development and validation of numerous Intelligence, Surveillance, and Reconnaissance analysis tools. PSTB has developed and will use the AODR to process requests for classified and unclassified data. ***FY 2011 Accomplishments:*** Provided uninterrupted test data distribution (data duplication and processing for distribution) to developers and systems administration for the automated online data repository.	0.450	-	-
Title: Low Altitude Air Defense (LAAD) Integrated Picture ***Description:*** The Low Altitude Air Defense (LAAD) Section Leader Vehicle (SLV) and Fire Unit Vehicle (FUV) have the ability to display air tracks via Link 16 messages. This project used the System Integration Environment 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. This project eliminated the need to install the Binary File Transfer (a hardware solution) in the FUVs. ***FY 2011 Accomplishments:*** Developed a prototyped Joint Range Extension gateway and client with an integrated air/ground picture which will be used by the Marine Corps for acquisition certification.	0.950	-	-
Title: Self-Contained Underwater Dispersant Delivery System (SCUDDS) ***Description:*** In support of Special Operations warfighters, this project developed a dispersal system to improve covert capabilities in littoral waters. Project details are classified. ***FY 2011 Accomplishments:***	0.750	0.200	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Prototype developed. ***FY 2012 Plans:*** Conduct operational testing.			
Title: Roman Intern ***Description:*** This project extended existing government owned technology for Iris Biometric Identification on Android mobile phones to produce a functional prototype system for field evaluation. ***FY 2011 Accomplishments:*** Delivery of prototype and demonstration of adaptation of Commercial-Off-The-Shelf (COTS) Android handsets for Iris identification. After a robust evaluation in FY 2012, this capability will transition to multiple Government Agencies with biometric and intelligence interests.	0.550	-	-
Title: Unmanned Aerial Vehicle (UAV) Outer Control ***Description:*** This project demonstrated the potential ease and effectiveness of outer control of small tactical Unmanned Aerial Vehicles. Student researchers demonstrated outer control capabilities using commercial off-the-shelf radio control systems and autopilots. Their ability to achieve control was documented with their approaches, equipment selection, and effectiveness. ***FY 2011 Accomplishments:*** Demonstrated of outer control of small, tactical UAVs. Delivered final report and findings to observers. Results of this experiment will inform development of countermeasures.	0.250	-	-
Title: Heterogeneous Cooperative UAVs ***Description:*** This project developed a collaborative framework that supports cross-domain transfer of information between a heterogeneous mix of unmanned vehicles and advancement of unmanned systems autonomous technologies to demonstrate collaborative behavior while minimizing human command and control. This effort simulated a surveillance scenario involving multiple aerial and underwater vehicles communicating via a network. ***FY 2011 Accomplishments:*** Demonstrated surveillance, detection, tracking, and handoff using the simulation.	0.200	-	-
Title: Afghan Endgames	0.325	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: This project developed a range of options to effectively and efficiently achieve objectives in Afghanistan. A comprehensive framework was developed to understand the dynamics of war and politics in Afghanistan, and options to transition from combat operations. ***FY 2011 Accomplishments:*** A range of options was developed with strategies to achieve objectives in Afghanistan. A published book was generated upon completion of the project. The book is a reference tool for International Security Assistance Force (ISAF) personnel.			
Title: Aluminum Combustor ***Description:*** This project developed a fuel feed system for an aluminum combustion power system. The project significantly improved the availability and economy of aluminum fuel to power a high energy air independent power source for unmanned underwater vehicles (UUVs). ***FY 2011 Accomplishments:*** Delivered 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. Results of this effort will inform the development of the Navy's advanced UUVs.	0.600	-	-
Title: Analysis and Targeting for Radicalization Intervention ***Description:*** This project piloted 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, the project identified and mapped relevant social and information networks, determined their virulence and effectiveness, mapped current influence flows and effects, and identified opportunities and candidate means for positive change. ***FY 2011 Accomplishments:*** Delivered 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 report includes a plan laying out a path forward for full development, test, and deployment of software tools implementing the analytical process.	0.300	-	-
Title: Foliage Penetrating (FOPEN) Light Detection and Ranging (LIDAR) Red Team ***Description:*** This project provided a construct to assess the susceptibility of the FOPEN LIDAR sensor to defeat by parties not intimately familiar with the technology. The project developed 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.	0.200	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Delivery of Red Team Assessment including recommendations on system operational employment, potential vulnerabilities, likely countermeasures taken by the threat, and potential counter-countermeasure to increase functionality or operational effectiveness of the system. This assessment is being used by operational commanders with FOPEN LIDAR deployed in their area of responsibility.			
Title: Analysis of High Frequency (HF) Communications ***Description:*** This project identified HF voice and data targets in an operational area of interest, captured existing tactical/national capabilities against the target set; recommended commercial off-the-shelf based gap-filling capabilities; and developed and operationally tested a prototype capability. ***FY 2011 Accomplishments:*** Provided operational users characterization of the current, emerging, and projected HF environment in an operational area of interest, recommended capabilities to inform investment decisions, provided a template for other theaters, and tested a prototype in a representative environment.	0.800	-	-
Title: Remote Detection of Explosives ***Description:*** This project sought new solutions to the technical challenge of detection of explosive chemical indicators using “crowdsourcing,” an alternative approach engaging thousands of expert scientists, engineers, and entrepreneurs practicing in many disciplines. ***FY 2011 Accomplishments:*** Selected several solutions for modest awards. Explored the most promising approach for a novel solution to be able to detect explosives.	0.200	-	-
Title: CellRad ***Description:*** This project will show that a large number of commercial off-the-shelf (COTS) cellular phones could be cheaply modified via software changes in order to build a large scale, deployable, mobile, network sensor array for radiation detection. ***FY 2011 Accomplishments:*** Performed isotope group identification testing; developed cell phone deployable software; developed data acquistion tracking, analysis, and display system; developed cell phone to host communications and compression software; Perfoemed integrated test for cell phone system; Performed demonstration of prototype cell phone system at Idaho National Laboratory (INL). ***FY 2012 Plans:***	0.775	1.900	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Develop cell phone software for detecting radiological sources; cell phone to host computer compression and communications software; system modeling tools; host computer software for collection and visualization of radiological event data; simulations of phone and network utilization. Perform field test with multiple cell phones and radiological sources. Validate and analyze simulations against Demo results. Document field test results in final report.			
Title: Yellow Box ***Description:*** This project developed a wireless commercial device discovery, tracking, and identification system. Yellow Box data can then be used not only to survey areas and identify specific devices, but associate those devices with specific users. Once users are associated with specific devices, Yellow Box output can be pulled into systems like Palantir and Maltego, to develop rich and detailed patterns of life. ***FY 2011 Accomplishments:*** Developed and produced prototype, documentation, and tactics, techniques, and procedures (TTPs). Trained operational users for assessment.	0.325	-	-
Title: Sprayable Antenna ***Description:*** Sprayable antenna technology can be sprayed or painted onto any surface in minutes. These applications can be customized to specific users and provide a Low Probability of Detection capability by eliminating the need for large detectable antenna arrays. ***FY 2011 Accomplishments:*** This project delivered 6 Soft Antenna Kits for use by Special Operations Scout Sniper Teams and 4 Vehicle Kits of various frequency configurations as specified by users.	0.600	-	-
Title: Exploitation of Space-Based Assets ***Description:*** This project provided Situational Awareness (SA) and trend analysis of small commercial Tactical Satellites (TACSATs) through market research and baseline satellite operational data. The details of this project are classified. ***FY 2011 Accomplishments:*** Project provided a user-validated TACSAT database describing capabilities and characteristics. ***FY 2012 Plans:*** Conduct demonstration of the database as decision process tool.	0.750	0.750	-
Title: Exploitation of Low-Level Communications	0.300	0.700	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: This effort provides a material and technical solution to acquire and immediately exploit tactical Communications Intelligence (COMINT) by intercepting and simultaneously translating enemy chatter from Pashto into English, enabling our forces to hear enemy communications in English, in near real-time. ***FY 2011 Accomplishments:*** Completed technical validation report/demonstration of concept including an analysis of data collected and machine translation capabilities for the Pashto to English language pair. ***FY 2012 Plans:*** Prototype development and operational assessment.			
Title: Language Exploitation and Analysis from Dynamic Sources (LEADS) ***Description:*** This project generates cues for analysts and sensors from intelligence data. The effort includes content extraction and representation tasks, and network analysis and exploitation tasks. Geospatial relationships between entities, networks, and events are analyzed to identify high-activity areas. ***FY 2011 Accomplishments:*** Developed prototype tools and analysis results including baseline dataset ingestion and representation, baseline entity extraction, and initial social network construction of subset intelligence data. ***FY 2012 Plans:*** Develop sentiment and dynamic network analysis.	0.550	0.900	-
Title: Hydrogen Power Unit ***Description:*** The Hydrogen Power Unit (HPU) is a self-contained, stackable electrical generation system when combined with a fuel cell. It is fueled by a water-based, non-flammable, and non-toxic Liquid Safety Fuel (LSF). Hydrogen can be delivered "on-demand" directly into integrated fuel cell(s) for real-time, immediate use. ***FY 2011 Accomplishments:*** In coordination with Central Command (CENTCOM), the project succesfully demonstrated the capability to efficiently produce hydrogen as a self-contained stackable fuel cell. ***FY 2012 Plans:*** A follow on demonstration in an instrumental lab is planned for FY 2012.	0.700	-	-
Title: Enhanced Tactical High Frequency EXploitation (ETHEX)	0.475	0.500	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: The Enhanced Tactical HF EXploitation (ETHEX) project develops new tools to support the collection and targeting of High Frequency communications and data signals known to be employed by insurgent, terrorist and narcotics trafficking organizations. ***FY 2011 Accomplishments:*** Identified current HF Near Vertical Incident Skywave (NVIS) targets of interest to US Southern Command, US Pacific Command, and US Central Command. The initial assessment included the evolution and deployment of target communications, data, and Improvised Explosive Device-related equipment, mapping available tactical HF exploitation systems against the target set; developed and refined techniques for tactical collection and geolocation of HF-NVIS and HF – Automatic Link Evaluation (HF-ALE) targets; and validated candidate techniques and algorithms through limited laboratory and range experiments. ***FY 2012 Plans:*** Modeling of HF propagation, and communication systems; Monitoring & surveillance techniques for HF-NVIS targets; Fabrication of field-testable prototype equipment for HF Radio Direction Finding and position fixing of HF-NVIS and HF-ALE signals. Prototype will undergo an operational evaluation in FY 2012.			
Title: Sensitive Chemical Vapor Sensor ***Description:*** This effort demonstrates the feasibility of simultaneous, sensitive chemical detection of multiple vapor constituents. This remote detection system is more sensitive than long-wave infrared hyperspectral systems while covering a broader spectral range than differential absorption Light Detection and Ranging (LIDAR) systems and would be suitable for close-in or modest standoff detection of a host of explosive and/or chemical weapon related threats. ***FY 2011 Accomplishments:*** Demonstrated open-air detection of homemade explosive materials from a remote distance. Developed link budget models and provided design for scaled system capable of detection at distances greater than 50 meters.	0.575	-	-
Title: Anti-Swimmer Detection Technology Demonstration ***Description:*** The Swimmer Detection Sonar Network (SDSN) is based on an integrated network of independent sonar nodes and is designed to provide enhanced situational awareness in harbor areas. The operational demonstration of the SDSN system indicates that US Naval Forces, Central Command (USNAVCENT) can employ a sonar capability to detect the presence of swimmers within their harbor areas effectively. ***FY 2011 Accomplishments:***	0.869	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Delivery to United States Naval Center (USNAVCEN) and installation of capability, training of users, operational assessment.			
Title: Accedo ***Description:*** This project demonstrated a new Doppler-based Frequency-Of-Arrival approach that enables fast geo-location of intermittent signal emitters, significantly reducing the time requirement for geo-location and allowing both detection from an unmanned aerial system and detection of intermittent sources. ***FY 2011 Accomplishments:*** Prototype development completed; field testing will be conducted February 2012.	0.919	-	-
Title: High Integrity Global Positioning System (iGPS) ***Description:*** The iGPS program will provide prototype iGPS navigation hardware for Combatant Commander testing in dense jungle canopy, mountainous terrains, urban canyons, and on naval platforms. Early Warfighter assessments of the performance of prototype iGPS equipment in these environments will be employed in enhancing iGPS User Equipment for fielding and assist in Concept of Operations (CONOPS) refinement. ***FY 2011 Accomplishments:*** Initiated planning for installation of iGPS prototype Hardware and field testing on a Pacific Command (PACOM) naval platform. ***FY 2012 Plans:*** Begin Joint field testing with Combatant Commanders, draft initial Warfighter assessments of hardware and operations and initiate iGPS design trades for militarized options.	5.000	-	-
Title: CLOUDBREAK Campaign Initiative ***Description:*** CLOUDBREAK will bring together JCTDs that focus on Command and Control among all Combatant Commands. Cloudbreak will drive a common "plug and fight" architecture that provides services and consumes data based on the Defense Information Enterprise Architecture (DIEA) and the Defense Intelligence Information Enterprise (DI2E) framework. CLOUDBREAK will demonstrate capabilities which can be provided as composable services on the Global Information Grid (GIG). Success will be achieved when capabilities from multiple Programs of Record (PoR), JCTDs and other tools are reused by multiple COCOMs, based on common standards to meet changing needs. The CLOUDBREAK campaigns will demonstrate existing mature capabilities in Cyber, Ops/Intel, Situational Awareness and Regional Domain Awareness that meet COCOM priorities. ***FY 2011 Accomplishments:*** Initiated system engineering and planning for CLOUDBREAK Campaign 1 to be executed in FY 2012 in USPACOM during Terminal Fury 12. Efforts accomplished include requisite planning for campaign execution, developing test plans, metrics, and	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
training to deliver the following services: Common Operation Picture (COP) integration of he National Decision Support Service (NSLDSS) JCTD and Maritime COP; synchronization of J6/Network and Cyber tools, and a Quick Reaction Capability (QRC) for the J2 Intelligence and Operations Center (JIOC). ***FY 2012 Plans:*** Partner funding required. Complete CLOUDBREAK Campaign 1 during Terminal Fury 12 and Valiant Shield 12. CLOUDBREAK will provide Operations and Intellengece services from a DI2E enabled JIOC; integrated data sources; dynamic, reconfigurable COP services including widget Mashups; Cyber Situational Awareness Services; and automated tools to sync Ops, Intel, and Cyber thereby automating the Command and Control (C2) of C2 services. ***FY 2013 Plans:*** Partner funding required. Provide CLOUDBREAK Campaign during a relevant exercise with a theme of Humanitarian Assistance/ Disaster Response (HA/DR). The services planned for demonstration include Maritime/Regional Domain Awareness Services, unclassified sensor integration, interagency Situational Awareness and Collaborative services that facilitate the automation of HA/ DR C2.			
Title: Blue Dart III ***Description:*** A focused experiment exploring the asymmetric attack threat posed by unmanned underwater vehicles (UUVs) 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 UUV homemade devices to meet specific mission profiles. ***FY 2012 Plans:*** A Blue Dart III field demonstration will be held to assess the viability of student solutions to the proposed asymmetric attack mission. The objective will be to provide intelligence assets indicators, warnings, threat capabilities, and limitations of US defenses in the maritime scenario, and to enhance the awareness in countering asymmetric threats.	-	0.500	-
Title: Alpha Act ***Description:*** This project will develop and deploy an advanced After Action Review (AAR) software tool for National Guard Agribusiness Development Teams (ADTs) based on the AlphaACT® crisis decision support platform. The AlphaACT AAR Tool for ADTs will be a hosted, automated web application that will: facilitate after action reviews of ADT missions; archive the information in an unclassified, minable database; automatically produce and distribute key mission reports; and make the information immediately available for mission planning and lessons learned. ***FY 2012 Plans:***	-	0.720	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
The AAR Tool will be designed, built, and tested in collaboration with the Kansas National Guard ADT Program.			
Title: ADDCAP ***Description:*** This project will deploy a suite of portable (from hand-held to enterprise level) automated handwriting identification tools to support real-time sensitive site exploitation, law-enforcement, and other uses. ***FY 2012 Plans:*** US Africa Command (AFRICOM) will utilize Siemen's D-Scribe software suite to conduct document comparisons in real world applications to explore the range of tactical applications, concepts of operations, and requirements for automated writer identification tools.	-	0.100	-
Title: Sky SharpEye ***Description:*** The Sky SharpEye program will demonstrate the feasibility, and product utility, of integrating a modified maritime SharpEye X-Band Solid State radar in an Unmanned Aerial System (UAS), in other light reconnaissance aircraft to generate Intelligence, Surveillance and Reconnaissance (ISR) products responsive to the needs of ground and maritime forces. ***FY 2012 Plans:*** The program will develop and demonstrate the required Concept of Operations (CONOPS) and Concept of Employment (CONEMP) for use of a solid state power amplifier (SSPA) radar in a UAS, as well as the hardware, software and power supply interfaces with the test airborne platforms. The anticipated test platforms include initially a manned helicopter (Huey), and then will transition to a Fire Scout MQ-80 rotary wing UAS.	-	1.200	-
Title: Advanced Manufacturing and Prototyping Initiative (AMPI) ***Description:*** This project will utilize Pennsylvania State University's capabilities to establish a collaboration hub for advancing manufacturing technologies within DoD and industry. The AMPI will develop, document, demonstrate, and test new products; provide expertise for process technology, prototyping, scale-up, and manufacturing demonstrations; provide technology & requirements forecasting; and, provide a secure integrated data environment for design, manufacturing support in training and education. ***FY 2012 Plans:*** Conduct DoD/Industry planning meeting to identify high priority technologies, products and technology needs and project selection criteria; define facility requirements, identify resources; develop an information and cyber security training and support plan; define Intellectual Property (IP) rights, licensing and ownership policy; develop a feedback process and metrics with industry and DoD clients/sponsors; establish a focused pilot project and perform proof-of-concept process development.	-	0.500	-
Title: Commercial Product Vulnerabilities and Applications (FY 2012 and FY 2013 New Start Focal Area Plans)	-	3.058	6.100

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: Focal area for FY 2012 and FY 2013 Commercial Product Vulnerabilities and Applications projects will explore the use of commercial-off-the-shelf products to address immediate operational needs. ***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 identify commercial product vulnerabilities and applications. ***FY 2013 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 identify commercial product vulnerabilities and applications.			
Title: Red Teaming in Support of Rapid Fielding (FY 2012 and FY 2013 New Start Focal Area Plans) ***Description:*** Focal area for FY 2012 and FY 2013 Red Teaming projects will assess the susceptibility of Rapid Fielding technologies to defeat by parties not intimately familiar with the technology. RRTO will leverage the innovative capabilities of Federally Funded Research and Development Centers to develop a construct that current or future systems can be gamed against in a distributed table top environment against traditional and non-traditional players. ***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 key technologies and systems to be assessed by red teams. Deliverables will include recommendations on system operational employment, potential vulnerabilities, likely countermeasures taken by the threat, and potential counter-countermeasures to increase functionality or operational effectiveness of the system. ***FY 2013 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 key technologies and systems to be assessed by red teams. Deliverables will include recommendations on system operational employment, potential	-	2.800	6.300

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
vulnerabilities, likely countermeasures taken by the threat, and potential counter-countermeasures to increase functionality or operational effectiveness of the system.			
Title: Open Source Data Analysis and Applications (FY 2012 and FY 2013 New Start Focal Area Plans) ***Description:*** Focal area for FY 2012 and FY 2013 Open Source Data Analysis and Applications projects include the development of capabilities, software, and tools to analyze open source information. ***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 open source data analysis tools and applications ***FY 2013 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 open source data analysis tools and applications.	-	2.458	5.512
Title: Countering Violent Extremism and Planning Support (FY 2012 and FY 2013 New Start Focal Area Plans) ***Description:*** Focal area for FY 2012 and FY 2013 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 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. ***FY 2013 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	-	2.958	5.415

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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.			
Title: Autonomous Systems and Behaviors (FY 2012 and FY 2013 New Start Focal Area Plans) ***Description:*** Focal area for FY 2012 and FY 2013 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 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. ***FY 2013 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.	-	2.980	5.677
Title: Interface of Military ops with Law Enforcement and Border Patrol (FY 2012 and FY 2013 New Start Focal Area Plans) ***Description:*** Focal area for FY 2012 and FY 2013 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 that can be used in military base protection, and expanding the capabilities of biometrics and forensics tools. ***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. ***FY 2013 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	-	2.616	5.100

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities of interest to multiple federal organizations.			
Title: Intelligence, Surveillance, and Reconnaissance (ISR) (FY 2012 and FY 2013 New Start Focal Area Plans) ***Description:*** Focal area for FY 2012 and FY 2013 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 more effective processing, exploitation, and dissemination capabilities to facilitate integration of new and existing 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. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future ISR capabilities. ***FY 2013 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.	-	2.500	4.950
Title: Urban Characterization Focus Areas (FY 2013 New Start Focal Area Plans) ***Description:*** Focal area for FY 2013 Urban Characterization projects will identify, analyze, and describe typical urban areas for modeling, simulation, and planning purposes. These efforts will inform and enable development of intelligence, surveillance and reconnaissance (ISR), electronic warfare, kinetic and other capabilities needed for future military operations in a wide range of urban areas. ***FY 2013 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 open source data analysis tools and applications.	-	-	5.000
Title: Biometrics and Forensics Science and Technology Focus Area (FY 2013 New Start Focal Area Plans) ***Description:*** Focal area for FY 2013 Biometrics and Forensics projects will address the technology gaps that limit our ability to quickly and accurately identify anonymous individuals who threaten our physical and virtual assets either overseas or in the Homeland. Additionally, the Biometrics and Forensics projects will collaborate with interagency partners to attribute enemy activity	-	-	11.000

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
to a specific individual; and, will operationally evaluate and test biometrics and forensics systems and technologies. Biometrics and Forensics projects will develop emerging technologies that support evolving identity operations and forensic capabilities required by commanders and warfighters in ongoing and future military activities. ***FY 2013 Plans:*** The biometric portfolio will support gaps identified by commanders in the areas of increasing standoff distance for collection, exploration of the use of emerging biometric modalities and collection of biometric data from non-cooperative subjects. The forensic portfolio will support gaps identified by commanders in the areas of reducing time to collect forensic data, improving accuracy of analysis of data, increasing the types of forensics data collected and increasing the amount of analysis that can be done in a field environment vice a laboratory environment. Projects will be selected after coordination throughout DoD and across other U.S. Government Departments and Agencies to maximize collaborative investment and prevent redundant research.			
Accomplishments/Planned Programs Subtotals	38.312	30.950	55.054

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 4-2D. The title of this objective is "Speed Technology Transition Focused on Warfighting Needs" and the metrics for this objective is to transition 30 percent of completing demonstrations program per year. For projects completed in FY 2010 and FY 2011, the RRF achieved a transition rate of greater than 75 percent.

In FY 2012 and FY 2013, 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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P830: *RDT&E Architecture and Integration*	-	10.403	10.316	-	10.316	10.040	10.496	10.817	11.106	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 Improvised Explosive Device (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 Quadrennial Defense Review (QDR) mandated development of an institutionalized "Rapid Acquisition Capability." The requested funding supports the development of a representative forward operating base (FOB) 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 continue to be updated and enhanced as the threat evolves. 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 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 2011	FY 2012	FY 2013
Title: Joint Experimentation Range Complex Expansion	-	10.403	10.316
Description: To support the expanded JERC capabilities, these resources support a modest level of testing infrastructure improvement, personnel and test equipment. Additionally, resources will support the ability to create and test, in a representative environment, counters to future commercial wireless capabilities (4G phones) and IED activations, forward operating base protection systems, characterization of future Homemade Explosives precursor materials and assessment of Intelligence, Surveillance, and Reconnaissance (ISR) systems in both stand alone operations and within an operational context. This enhancement will complement the Assistant Secretary of Defense (Research and Engineering) (ASD R&E) and Joint Improvised Explosive Device Defeat Organization (JIEDDO) Science & Technology (S&T) investment and acquisition strategy.			
FY 2012 Plans: To support the expanded JERC capabilities, these resources support a modest level of testing infrastructure improvement, personnel and test equipment. Additionally, resources will support the ability to create and test, in a representative environment, counters to future commercial wireless capabilities (4G phones) and IED activations, forward operating base protection systems, characterization of future Homemade Explosives precursor materials and assessment of Intelligence, Surveillance, and Reconnaissance (ISR) systems in both stand alone operations and within an operational context. This enhancement will			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
complement the Assistant Secretary of Defense (Research and Engineering) (ASD R&E) and Joint Improvised Explosive Device Defeat Organization (JIEDDO) Science & Technology (S&T) investment and acquisition strategy. ***FY 2013 Plans:*** Evaluate trends of the emerging threat to blue forces and continue improvements to the testing infrastructure to support evaluation of emerging technologies to counter the evolving threat. Potential future focus areas could include 5G cellular networks, novel enhanced explosives, comprehensive force protection capabilities, more robust Intelligence Surveillance and Reconnaissance (ISR) sensors large data processing, exploitation, and dissemination data handling. These investments will continue to support the ASD(R&E) and JIEDDO S&T investment and acquisition strategy.			
Accomplishments/Planned Programs Subtotals	-	10.403	10.316

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 3.5.2D. The title of this objective is "Maintain a strong technical foundation within the Department's Science and Technology (S&T) program" and the metrics for this objective is to transition 30 percent of completing demonstration programs per year.

In FY 2013, investment decisions will be made during the execution year, to rapidly respond to combatant commander requirement and new threats or new opportunities as they relate to technologies emerging from non-traditional sources.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P831: *Joint Rapid Acquisition Cell Support*	-	1.734	1.760	-	1.760	1.756	1.860	2.055	2.117	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 Combatant Commander (COCOM) identified and Joint Staff validated immediate warfighter needs. FY 2012 is the first year for a dedicated funding line for this effort. The funding in this project is 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 Under Secretary of Defense Comptroller (USD(C)), 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), make programmatic, budget, and acquisition recommendations for JUONs and identified capability gaps to the Secretary of Defense.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Joint Rapid Acquisition Cell (JRAC) Management Support	-	1.734	1.760
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 JRAC to enable management and tracking of COCOM initiated and Joint Staff validated immediate warfighter needs. ***FY 2013 Plans:*** Support for the JRAC to enable management and tracking of COCOM initiated and Joint Staff validated immediate warfighter needs.			
Accomplishments/Planned Programs Subtotals	-	1.734	1.760

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

NA – Capabilities acquired to fulfill JUONs are provided by other DOD components.

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 or hourly rates and/or firm fixed price.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 P833: *Strategic Multi-Layered Assessment (SMA) Support*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P833: *Strategic Multi-Layered Assessment (SMA) Support*	-	-	1.970	-	1.970	1.900	1.930	1.960	2.000	Continuing	Continuing

Note

The Strategic Multi-Layered Assessment (SMA) project was added in FY 2013 as a result of a net zero functional transfer of resources and mission from United States Strategic Command (STRATCOM).

A. Mission Description and Budget Item Justification

The Strategic Multi-Layered Assessment Cell supports all Combatant Commanders (COCOMs), Joint Force Commanders and all other government agencies by assessing complex operational/technical challenges which require multi-agency and multi-disciplinary approaches. With input from across the United States Government, academia and the private sector, the SMA cell develops solution options to COCOM generated challenging problems and informs the command's senior leadership. Priorities for SMA problems are set by the Joint Staff Deputy for Operations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Strategic Multi-Layered Assessment (SMA) Support	-	-	1.970
Description: In FY 2011 and FY 2012 the SMA project has been supported by STRATCOM and the Rapid Reaction Fund (PE 0603826D8Z). In FY 2013 a net zero functional transfer of resources and mission responsibilities from STRATCOM to Office of the Secretary of Defense (OSD) resulted in funding this project. ***FY 2013 Plans:*** In FY 2013 the SMA cell will continue to actively work with the COCOMs and the Joint Staff to identify challenging problems that are not within the traditional areas of DoD expertise. These problems will be in direct support of the Combatant Commanders and may include areas such as: counter terrorism; counter weapons of mass destruction (state and non-state); counter global or regional social and cultural assessments; and, individual state or national level deterrence studies.			
Accomplishments/Planned Programs Subtotals	-	-	1.970

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 P833: *Strategic Multi-Layered Assessment (SMA) Support*

E. Performance Metrics

SMA 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 execution documents. Each project results are reviewed by a senior review group that is comprised with representatives from the Office of the Secretary of Defense, the Joint Staff, the COCOMs and outside subject matter experts. The ultimate measure of success is adaption and transition of SMA products by the COCOM and supporting entities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	87.800	38.112	-	-	-	-	-	-	-	Continuing	Continuing
P808: *Joint Experimentation*	87.800	38.112	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.

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 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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	111.946	58.130	52.045	-	52.045
Current President's Budget	87.800	38.112	-	-	-
Total Adjustments	-24.146	-20.018	-52.045	-	-52.045
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.653	-0.757			
• Other Program Adjustments	-1.735	-	-52.045	-	-52.045
• FFRDC	-0.336	-0.261	-	-	-
• Economic Assumptions	-0.467	-	-	-	-
• Congressional Adjustments	-19.955	-19.000	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P808: *Joint Experimentation*	87.800	38.112	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.

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

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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.

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

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

(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 FY 2012 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.
- 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 percent cycle time or 17 percent cost reduction in enterprise process, and 31 percent 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 2011	FY 2012	FY 2013
Title: Building Partnerships (BP)	9.029	5.223	-

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 2011 Accomplishments:
• Delivered 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 was validated through experimentation in USAFRICOM and USEUCOM with multiple mission partners and provided a residual capability to allow the continued development of habitual relations. Partners included 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.
• Created 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 improved understanding of Service force generation models and resource application/prioritization. Experimentation was used to compare solutions for identification of specific roles and responsibilities, prioritization and integration of planning and execution of SFA

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
activity. 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. • 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 2011 Accomplishments:*** • Delivered 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. 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 2012 campaign will address projected mission critical capabilities and concepts required to succeed in preventing proliferation and countering weapons of mass destruction.	5.203	4.888	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• The scope of the work may include experimentation to identify and evaluate enabling technologies that lengthen detection ranges and strengthen Intelligence, Surveillance, and Reconnaissance (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 2011 Accomplishments:*** • In collaboration with interagency and multi-national partners, delivered complementary concepts and capabilities to deter, prevent and respond to a disruption or a denial of access to Global Commons. Concepts and capabilities were 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 United States and coalition ability to conduct commercial and military operations. • Developed C2 architectures that support readiness reporting, sustainment of forces, and operations in C2 denied and degraded environments. These architectures were 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. Products are: JFC C2 continuity processes and technologies, C2 templates and architectures, Multi-Service Tactics, Techniques, and Procedures (TTPs), Concept of Operations (CONOPS), and Command, Control, Communications, and Computers (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.	9.738	11.550	-
Title: Force Application (FA)	7.991	8.239	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: Joint Force Commander requires improved kinetic or non-kinetic capabilities to maneuver and engage adversaries from political, strategic, operational, and tactical perspectives. ***FY 2011 Accomplishments:*** • Developed 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). • Developed 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 experimentation with Title 10 experiments and other Service products and studies (for example: Navy Senior Steering Group (SSG), Army-Marine Staff Talks, and Air Force-Navy Air Sea Battle Concept, Training and Doctrine Command (TRADOC) Joint Forcible Entry Operations(JFEO) Study) to explore and develop a joint concept. Aggressive red teaming was used to explore the concept and validate the experimentation results. Products 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 2011 Accomplishments:*** • Assessed 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	5.389	4.933	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
experimentation, the following aspects of the JLC were 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 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 2011 Accomplishments:*** • Developed 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 was be evaluated through experimentation, M&S and real world exercise events. Products are: Global C2 BMD Integration Guide, prototype C2 architecture/structure and DOTMLPF-P recommendations. • Developed 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 contrasted 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 identified PAA force development and operational implications to mitigate future risks. Products are: decision/ planning tools (risk assumption, burden-sharing, force allocation, prioritization and deployment), PAA Implementation Guide Book and DOTMLPF-P recommendations.	16.263	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Developed and provided 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 Accomplishments:*** • Developed Computer Network Defense (CND) concept of operations, organizational construct, procedures, and enabling authorities/policies to strengthen the defense of critical infrastructure. This effort validated the concept of operation and procedures through experimentation and Modeling and Simulation. Products 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:*** • 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.	8.937	3.279	-
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.	19.038	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Combatant Command Experimentation • Supported USSOCOM with joint analysis to complete the Final Report on Global Scout 11. • Supported USPACOM with laboratory capacity to conduct Cyber Experimentation. • Supported USEUCOM with joint analytical capacity to conduct Socio-Cultural Analysis. • Provided 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: Supported the Army's Training and Doctrine Command with joint analysis for the Unified Quest 11 campaign of learning. • Navy – Global 11: Supported 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: Supported the Air Force with joint analysis perspective in development of the final report on Unified Engagement 11. • Marine Corps – Expeditionary Warrior 11: Provided 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)	5.100	-	-
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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 2011 Accomplishments:*** • Continued 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. • Conducted 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. • Assessed the urban environment test solutions of the Joint Urban Test Capability (JUTC) Program to determine progress in mitigating gaps identified in the Urban Environment Test Capability (UETC) Report and DOD's ability to replicate, simulate and emulate the urban environment for test and evaluation (T&E). • Led and coordinated 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. • Led and coordinated 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. • Continued established discovery seminar wargames to build on work optimizing joint and coalition force activities in complex environments. Extended 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 ten concepts carrying into FY 2011 and US-Israel Hybrid Threat Seminar). • Planned and conducted 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. • Partnered 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 entity within DoD that utilize analytic and research processes integrates doctoral level future thinking and extrapolates likely future	1.112	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

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 2011 Accomplishments:

• Supported the Chairman's Capstone Concept for Joint Operations (CCJO) review and all Combatant Command concept and doctrine development, Limited Objective Experiments (LOEs) and experimentation program through research and publishing of the 2011 JOE. Based on doctoral level Subject Matter Expertise (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.

• Provided 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 reviewed and refined OSD's Integrated Security Contexts (ISCs) and Foundational Activities (FA) scenarios and participation in the Support to Strategic Analysis process; provided input to the Comprehensive Joint Assessment (CJA) and other policy and strategy "future focused" documents.

• Researched, analyze, synthesized and promoted a vision of the future that includes critical analysis of battlefield innovation of disruptive technologies through partnership with Defense Intelligence Agency (DIA), command and service intelligence, information dominance and national defense intelligence agencies. To this end, planned, coordinated, and executed international conferences focused as follows and provided DoD, JCS, Combatant Command, Service and Multinational attendee actionable white papers on:

• Ideological Conflict over Global Networks "Winning the Global War of Ideas"

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• The Rise and Fragmentation of Great Powers: China • The Rise and Fragmentation of Great Powers: India • Specific and measurable outcomes include: • 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.			
Title: Transferred to Joint Staff Accounts ***Description:*** In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications. ***FY 2013 Plans:*** In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.	-	-	-
Accomplishments/Planned Programs Subtotals	87.800	38.112	-

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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

(5) resolution of specific joint concept and capability shortfalls delineated through the JCD&E experimentation campaign plan development process.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	33.114	29.977	47.433	-	47.433	48.158	49.086	50.171	50.882	Continuing	Continuing
P476: *DoD Modeling and Simulation Management Office*	33.114	29.977	36.433	-	36.433	37.158	38.086	39.171	39.882	Continuing	Continuing
P477: *Effects Chain Analyses Cell*	-	-	11.000	-	11.000	11.000	11.000	11.000	11.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

Modeling and Simulation (M&S) supports the full range and scope of DoD operations. M&S is a key enabler of capabilities supporting real-world applications that underpin innovative solutions meeting national security challenges, act as force multipliers, save resources, and save lives. The DoD Modeling and Simulation Management Office (MSMO), on behalf of the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)), enhances the DoD M&S Enterprise by (1) promoting cooperation and collaboration in finding solutions for removing barriers to interoperability and reuse; and (2) providing a common technical framework of architectures and data standards, and common M&S services, that improve interoperability, reuse, and cost effectiveness. The USD(AT&L), under the authority of DoD Directive 5134.1, provides the oversight for this 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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	38.140	37.029	47.430	-	47.430
Current President's Budget	33.114	29.977	47.433	-	47.433
Total Adjustments	-5.026	-7.052	0.003	-	0.003
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.829	-0.845			
• Other Adjustments	1.091	-	0.003	-	0.003
• Economic Assumptions	-0.168	-	-	-	-
• Congressional Adjustments	-5.000	-6.000	-	-	-
• FFRDC	-0.120	-0.207	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P476: *DoD Modeling and Simulation Management Office*	33.114	29.977	36.433	-	36.433	37.158	38.086	39.171	39.882	Continuing	Continuing

A. Mission Description and Budget Item Justification

Modeling and Simulation (M&S) supports the full range and scope of Department of Defense (DoD) operations. M&S is a key enabler of capabilities supporting real-world applications that underpin innovative solutions meeting national security challenges, act as force multipliers, save resources, and save lives. The DoD Modeling and Simulation Management Office (MSMO), designated by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) to be the focal point for DoD M&S, enhances the DoD M&S Enterprise by (1) promoting cooperation and collaboration in finding solutions for removing barriers to interoperability and reuse; and (2) providing a common technical framework of architectures and data standards, and common M&S services, that improve interoperability, reuse, and cost effectiveness. The USD(AT&L), under the authority of DoD Directive 5134.1, provides the oversight for this Program Element (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.”

MSMO is responsible for:
• Executing DoD’s M&S Strategic vision.
• Bringing together M&S stakeholders to advise and assist on finding solutions for removing the barriers to interoperability, reuse, commonality, efficiency, and effectiveness.
• Developing and coordinating, with advice and assistance from the M&S Steering Committee, policy/guidance, standards, best practices, and strategic planning processes that promote interoperability and reuse.
• Managing funds to support DoD M&S Enterprise activities.

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 supports 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 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Title: DoD Modeling and Simulation Management Office	33.114	29.977	36.433
FY 2011 Accomplishments: In FY 2011, this activity enhanced M&S support to DoD missions and the warfighter, improved training and experimentation, augmented test and evaluation, supported affordable acquisition of warfighter and M&S capabilities, and provided improved analysis, planning and intelligence. Specific tasks accomplished in FY 2011 divide into three classes, management/coordination activities, sustainment activities, and development activities: In the area of Management /coordination activities for improving the effectiveness and cost effectiveness of the DoD M&S enterprise:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Continued as DoD Lead Standardization Activity (LSA) for managing M&S standards and methodologies to improve the interoperability and reuse of M&S within the DoD, other U.S. government agencies, and international M&S communities. • Continued serving as the DoD modeling and simulation focal point for M&S activities and for collaboration within the DoD providing advice and assistance to the USD AT&L on M&S. • Planned, prepared, coordinated, and managed the meetings of the DoD M&S Integrated Process Team (IPT) for providing advice and assistance to the M&S Steering Committee. • Wrote and coordinated an M&S Instruction (DoDI 5000.59) providing direction and guidance for DoD M&S policy and governance. • Wrote and coordinated a new M&S Glossary for standardization of terminology and increased collaboration across the DoD M&S Enterprise. • Developed the DoD M&S Enterprise strategy and published a DoD M&S Enterprise Strategic Plan for FY12-FY18. • Engaged the Modeling & Simulation Community of Interest (M&S COI) for integrating M&S Enterprise Data requirements into the DoD Wide Net Centric Data Strategy. • Managed the development of an M&S CO core program to maintain and sustain M&S tools, data, and services vital to the long term success of the DoD M&S Enterprise. • Transitioned the management of the DoD Enterprise M&S Catalog from CAPE to the M&S CO core program and developed a configuration management process for this important asset supporting re-use of DoD M&S. • Completed a study and report to Congress describing the viability of the domestic M&S industrial base study. • Provided oversight and support to a Virginia Modeling and Simulation Center (VMASC) study on M&S standards. • Provided functional oversight and technical direction to DTIC's Modeling and Simulation Information Analysis Center (MSIAC) for the acquisition, analysis, and dissemination of M&S information related to fulfilling DoD needs. • Established and coordinated plans to revise the Defense Acquisition University (DAU) M&S course content and curriculum to support the continuation of a well-trained M&S workforce. • Provided Simulation to C4I Interoperability (SIMCI) project technical assistance to Army and international activities. • Revised and continued the implementation of metrics for improving the execution of High Level Tasks sponsored by this PE. • Conducted quarterly program management reviews for the High Level Tasks sponsored by this PE and provided oversight, guidance, and financial control. • Supported the planning of the simulation summit and attended national stakeholder meetings. • Continued coordination with the Simulation Interoperability Standards Organization (SISO) for governance and development/ voting of M&S standards supporting interoperability. • Worked actively with other standard and professional organizations such as the Information Technology Standards Committee (ITSC), SISO, International Organization for Standards (ISO), Institute of Electrical and Electronics Engineers (IEEE) and the Military Operations Research Society (MORS) for the development and promulgation of standards relating to M&S.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Continued serving as the DoD modeling and simulation focal point for M&S activities and collaboration with non-DoD, federal agencies including the Department of Homeland Security (DHS), the Department of Energy (DOE), the Department of Justice (DOJ), and the National Aeronautics and Space Administration (NASA). • Continued serving as the DoD modeling and simulation focal point for M&S activities and collaboration with International agencies including NATO, Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), USFK, ROK and other Allies. In the area of sustainment, to maintain the value of previously developed tools, data, and services supporting effective DoD M&S: • Continued management of existing M&S standards. • Enhanced the High Level Architecture (HLA) compliance testing tool suites for improving M&S interoperability through use of this important simulation standard. • Verified HLA compliance of a set of Republic of Korea (ROK) simulations supporting joint warfighting between U.S. Forces Korea and ROK. • Refined and populated the DoD Enterprise M&S catalog making authoritative tools and data more widely accessible and useable. • Initiated new M&S Core requirements process and configuration management process. • Sustained the M&S business plan for the Joint Staff, Joint Strategy & Policy, J5, providing M&S requirements for Adaptive Planning Execution System. In the area of M&S Development to improve DoD M&S capability: • Developed the DoD M&S Enterprise Strategy to plan the efficient allocation of limited PE resources for improving effectiveness, interoperability, and re-use. • Developed M&S VV&A Standards Guide, Recommended Practices Guide, and risk-based VV&A methodology for improving the cost effectiveness and suitability of DoD M&S. • Refined requirements for the education and training of an effective M&S workforce. • Executed DoD M&S Enterprise high level tasks endorsed by the M&S SC: -- Rapid Data Generation (RDG) and the Environmental Data Cube Support System (EDCSS) for enhanced data initialization, environmental effects representation methodologies and data support tools to include development of an initial Common Data Production Environment (CDPE) as an incremental technical capability for enterprise M&S data Capability. -- Irregular Warfare (IW) Modeling & Simulation for enhanced analytical capabilities and continued coordination of the development and dissemination of M&S IW tools.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
-- Cyber Operations Research and Network Analysis (CORONA) for new cyber-warfare simulation tools and representation of cyber operations during acquisition and training events. -- Live-Virtual-Constructive Architecture Roadmap (LVC-AR) Implementation & Net-Centric Environment Implications for the development architectural frameworks, tools, and services to enable the integration of disparate M&S architectures. -- Integrated Threat Systems Modeling & Simulation for improved representation and implementation of threat capabilities and the representation of threats to US forces as systems-of-systems. -- DoD Enterprise M&S Catalog for improved visibility into DoD M&S assets supporting enhanced interoperability and reuse. • Developed the Data Management Working Group (DMWG) under the M&S Community of Interest (COI) to address M&S data specific technical challenges for the High Level Tasks and the DoD M&S data enterprise. • Developed Enterprise System Engineering M&S Data requirements, architecture, and standards for M&S Data.			
FY 2012 Plans: The focus for FY 2012 is on developing new enterprise strategies; refining data standards and common architectures; populating repositories supporting reuse; rationalizing the use of proprietary tools (consistent with the FAR); improving tools to model irregular warfare; enhancing interactions with our international partners; removing barriers to collaboration with industry, academia, interagency partners; and providing M&S education to the workforce. The tasks planned in FY 2012 again divide into three classes, management/coordination activities, sustainment activities, and development activities. Specific tasks for FY 2012 include: Management / Coordination Activities: • Continue as the DoD Lead Standardization Activity (LSA) for managing M&S standards and methodologies to improve the interoperability and reuse of M&S within the DoD, other U.S. government agencies, and international M&S communities. • Continue serving as the DoD modeling and simulation focal point for M&S activities and for collaboration within the DoD. • Plan, prepare, coordinate, and manage the meetings of the flag-officer level DoD M&S Steering Committee (SC) for providing advice and assistance to the USD AT&L on M&S. • Plan, prepare, coordinate, and manage the meetings of the DoD M&S Integrated Process Team (IPT) for providing advice and assistance to the M&S Steering Committee. • Publish the M&S Instruction (DoDI 5000.59) providing direction and guidance for DoD M&S policy and governance. • Publish the M&S Glossary online for standardization of terminology and increased collaboration across the DoD M&S Enterprise.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Continue managing the development of an M&S CO core program to maintain and sustain M&S tools, data, and services vital to the long term success of the DoD M&S Enterprise. • Provide functional oversight and technical direction to DTIC's Modeling and Simulation Information Analysis Center (MSIAC) and/or DTIC's Cyber Security and Information Systems Information Analysis Center (CSIAC). • Continue the implementation of metrics for improving the execution of High Level Tasks sponsored by this PE. • Coordinate and review four quarterly program management reviews for the High Level Tasks sponsored by this PE. • Support the planning of the simulation summit and attended national stakeholder meetings. • Continue coordination with the Simulation Interoperability Standards Organization (SISO) for governance and development/ voting of M&S standards supporting interoperability. • Continue working actively with other standard organizations for the development and promulgation of standards relating to M&S. • Serve as the DoD modeling and simulation focal point for M&S activities and collaboration with non-DoD, federal agencies including the Department of Homeland Security (DHS), the Department of Energy (DOE), the Department of Justice (DOJ), and the National Aeronautics and Space Administration (NASA). • Serve as the DoD modeling and simulation focal point for M&S activities and collaboration with International agencies including NATO, Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), USFK, ROK and other Allies. • Continue engaging Modeling & Simulation Community of Interest (M&S COI) activities for integrating M&S Enterprise Data requirements into the DoD Wide Net Centric Data Strategy. • Support and participate in the Data Management Working Group (DMWG) activities to address M&S data specific technical challenges for the HLTs and the DoD M&S data enterprise. Sustainment Activities: • Continue managing existing M&S standards. • Continue testing HLA compliance for simulations supporting joint warfighting. • Continue refining and populating the DoD Enterprise M&S catalog making authoritative tools and data more widely accessible and useable. • Maintain and synchronize the MSMO strategic calendar with DoD and international M&S activities. • Sustain the MSMO support agreements and contracts. • Coordinate M&S support contracts reviews. • Sustain M&S COI activities. • Sustain DMWG activities. • Participate at conferences such as the Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC) and through publications such as the M&S Journal and the Modeling and Simulation Coordination office website.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Development Activities: • Execute DoD M&S Enterprise high level tasks endorsed by the M&S SC: --Rapid Data Generation (RDG) and the Environmental Data Cube Support System (EDCSS) for enhanced environmental methodology and tools. --Irregular Warfare (IW) Modeling & Simulation for enhanced analytical capabilities and continued coordination of the development and dissemination of M&S IW tools. --Cyber Operations Research and Network Analysis (CORONA) for new cyber-warfare tools. --LVC-AR Implementation & Net-Centric Environment Implications for integration of disparate M&S architectures. --Integrated Threat Systems Modeling & Simulation for improved representation and implementation of intelligence data. --DoD Enterprise M&S Catalog for improved visibility into DoD M&S assets supporting enhanced interoperability and reuse. • Continue developing Enterprise System Engineering M&S Data requirements, architecture, and standards for M&S Data. • Continue development of the Common Data Production Environment (CDPE) and finalize incremental technical capabilities for the DoD Global Force Management Data initiative. • Initiate new M&S Core enterprise capabilities activities. • Continue revising the DAU M&S course content and curriculum to support well-trained M&S workforce. • Develop M&S data enterprise business plan guide, identify and document M&S data technical, acquisition and sustainment/ transition business models for the DoD M&S data enterprise. • Develop Enterprise System Engineering M&S Data requirements, architecture, and standards for M&S Data by initiating development of enhanced and correlated geospatial data discovery using the DoD M&S Discovery Metadata Specification standard and by beginning developmental planning activities for M&S logistics data. • Develop the Planning Community strategic plan in support of the M&S CO M&S Strategic Plan. These 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 2013 Plans: DoD M&S management will sustain and advance the efforts implementing its “Strategic Vision for DoD Modeling and Simulation.” The focus for FY 2013 will be on enhancing the effectiveness of our M&S expenditures by smartly developing new common capabilities in an enterprise fashion and managing the proliferation of individual M&S tools by encouraging reuse and interoperability. Management/Coordination Activities:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Continue as the DoD Lead Standardization Activity (LSA) for managing M&S standards and methodologies to improve the interoperability and reuse of M&S within the DoD, other U.S. government agencies, and international M&S communities. • Continue serving as the DoD modeling and simulation focal point for M&S activities and for collaboration within the DoD. • Continue planning, preparing, coordinating, and managing the meetings of the flag-officer level DoD M&S Steering Committee (SC) for providing advice and assistance to the USD AT&L on M&S. • Continue planning, preparing, coordinating, and managing the meetings of the DoD M&S Integrated Process Team (IPT) for providing advice and assistance to the M&S Steering Committee. • Continue managing the development of an M&S CO core program to maintain and sustain M&S tools, data, and services vital to the long term success of the DoD M&S Enterprise. • Provide functional oversight and technical direction to DTIC's Modeling and Simulation Information Analysis Center (MSIAC) and/or DTIC's Cyber Security and Information Systems Information Analysis Center (CSIAC). • Continue the implementation of metrics for improving the execution of High Level Tasks sponsored by this PE. • Continue coordinating quarterly program management reviews for the High Level Tasks sponsored by this PE. • Continue supporting the planning of the simulation summit and attend national stakeholder meetings. • Continue coordination with the Simulation Interoperability Standards Organization (SISO) for governance and development/ voting of M&S standards supporting interoperability. • Continue working actively with other standard organizations for the development and promulgation of standards relating to M&S. • Continue serving as the DoD modeling and simulation focal point for M&S activities and collaboration with non-DoD, federal agencies including the Department of Homeland Security (DHS), the Department of Energy (DOE), the Department of Justice (DOJ), and the National Aeronautics and Space Administration (NASA). • Continue serving as the DoD modeling and simulation focal point for M&S activities and collaboration with International agencies including NATO, Partnership for Peace (PfP) nations, The Technical Cooperation Program (TTCP), USFK, ROK and other Allies. • Continue to engage Modeling & Simulation Community of Interest (M&S COI) activities for integrating M&S Enterprise Data requirements into the DoD Wide Net Centric Data Strategy. • Continue with the Data Management Working Group (DMWG) activities to address M&S data specific technical challenges for the HLTs and the DoD M&S HLTs and the DoD M&S data enterprise. Sustainment Activities: • Continue managing existing M&S standards. • Continue testing HLA compliance for simulations supporting joint warfighting. • Continue refining and populating the DoD Enterprise M&S catalog making authoritative tools and data more widely accessible and useable.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Maintain and synchronize the MSMO strategic calendar with DoD and international M&S activities. • Sustain MSMO support agreements and contracts. • Coordinate M&S support contracts reviews. • Sustain M&S COI activities. • Sustain DMWG activities. • Publish the Planning Community strategic plan. • Publish the Enterprise System Engineering M&S Data requirements, architecture, and standards Development Activities. • Maintain online M&S Glossary for standardization of terminology and increased collaboration across the DoD M&S Enterprise. Development Activities: • Provide funding for DoD M&S Enterprise high level tasks endorsed by the M&S SC. • Continue developing Enterprise System Engineering M&S Data requirements, architecture, and standards for M&S Data. • Continue development of the Common Data Production Environment (CDPE) by finalizing development of enhanced and correlated geospatial data discovery using the DoD M&S Discovery Metadata Specification standard, by continuing incremental developmental of M&S logistics data, and by beginning developmental planning activities for M&S Command & Control data. • Initiate new M&S Core enterprise capabilities activities. • Continue revising Defense Acquisition University (DAU) M&S course content and curriculum to support well-trained M&S workforce.			
Accomplishments/Planned Programs Subtotals	33.114	29.977	36.433

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

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 or updated in the authoritative DoD and international standards repositories, to include the Information Technology Standards and Defense Standardization Programs (Goal 1)

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 Community/Service business plans or strategies issued, re-issued, revised, or deleted. (Goal 2)
6. Number of simulation federates and infrastructure capabilities which participate in DoD standards verification and compliance activities (Goal 2)
7. Number of M&S gaps identified in the DoD M&S Enterprise Strategy and addressed by PE funding. (Goal 3)
8. Number of M&S resources (tools, data, and services) made visible or updated in the DoD M&S Enterprise Catalog for reuse and the completeness of each record according to DoD discovery metadata standards. (Goal 4)
9. Number of M&S repositories linked to the DoD M&S Enterprise Catalog. (Goal 4)
10. Number of users that register for and employ common tools promoted by the M&S Core enterprise capabilities program (Goal 4)
11. Number of users accessing and completing DoD sponsored training venues for educating the M&S workforce. (Goal 5)

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 P477: *Effects Chain Analyses Cell*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P477: *Effects Chain Analyses Cell*	-	-	11.000	-	11.000	11.000	11.000	11.000	11.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

The A2/AD effects chain analysis effort is a new effort to develop and strengthen the specific analysis data, tools, and actual technical analyses supporting decisions on weapon system and operational capability development. This effort will seed a team of about 5-10 analysts who will be responsible for identifying specific analytic limitations, developing the technical analysis plan, and implementing the plan. These analyses will be acquisition-centered net analyses of the end-to-end blue (US and Allies) capabilities compared to specific red (potential adversary) capabilities focused on identifying the most promising technologies for application to A2/AD problems. All of these analyses will address acquisition specific questions—can a system be accelerated? Can a group of capabilities be combined in different ways to improve the overall effectiveness of US systems, and so forth. This office is expected to work closely with the Joint Staff and the Military Departments and in particular with the Air Sea Battle Office.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Effects Chain Analyses Cell	-	-	11.000
FY 2013 Plans: The analyses will initially focus on PACOM and CENTCOM AORs. Projects undertaken will be approved by the Under Secretary of Defense (AT&L).			
Accomplishments/Planned Programs Subtotals	-	-	11.000

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 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	94.640	96.652	92.602	-	92.602	94.041	95.825	98.431	100.214	Continuing	Continuing
1: *High Speed Systems Test*	26.198	19.327	20.611	-	20.611	25.131	19.140	14.729	13.804	Continuing	Continuing
2: *Spectrum Efficient Technology*	7.755	9.608	8.140	-	8.140	7.770	10.401	10.380	11.425	Continuing	Continuing
3: *Electronic Warfare Test*	17.419	19.912	18.206	-	18.206	13.542	12.110	15.905	18.570	Continuing	Continuing
4: *Advanced Instrumentation Systems Technology*	7.710	10.618	10.150	-	10.150	9.021	11.072	12.413	12.049	Continuing	Continuing
5: *Directed Energy Test*	18.283	13.819	8.681	-	8.681	6.496	6.779	6.769	6.581	Continuing	Continuing
6: *Netcentric Systems Test*	12.465	17.428	17.255	-	17.255	16.724	12.290	12.270	11.270	Continuing	Continuing
7: *Unmanned and Autonomous System Test*	2.405	3.296	5.863	-	5.863	9.308	13.369	15.348	14.883	Continuing	Continuing
8: *Cyberspace Test*	2.405	2.644	3.696	-	3.696	6.049	10.664	10.617	11.632	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 stay in pace with evolving weapons technologies. This program is critical to ensure 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 applied research efforts from the highly developed technology base in DoD laboratories and test centers, other government agencies, industry, and academia to accelerate 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 Secretary of Defense, in a memorandum dated April 19, 2011, established seven strategic science and technology (S&T) investment priorities for fiscal years 2013-2017, specifically 1) Data to Decisions, 2) Engineered Resilient Systems, 3) Cyber Science and Technology, 4) Electronic Warfare/Electronic Protection, 5) Counter Weapons of Mass Destruction, 6) Autonomy, and 7) Human Systems. The T&E/S&T Program has been re-aligned and reprioritized to prepare the T&E community to test warfighting capabilities that emerge from these S&T priority investments.

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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	97.642	99.593	102.218	-	102.218
Current President's Budget	94.640	96.652	92.602	-	92.602
Total Adjustments	-3.002	-2.941	-9.616	-	-9.616
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.113	-2.276			
• Other Program Adjustments	-0.889	-0.665	-10.702	-	-10.702
• Economic Asssumption Adjustments	-	-	1.086	-	1.086

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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: *High Speed Systems Test*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
1: *High Speed Systems Test*	26.198	19.327	20.611	-	20.611	25.131	19.140	14.729	13.804	Continuing	Continuing

A. Mission Description and Budget Item Justification

High-speed/hypersonic weapons are being developed to ensure the continued military 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, and air-breathing space access vehicles. These systems require development of high-speed turbine, ramjet, scramjet, and combined cycle engines; high temperature materials; thermal protection systems; and thermal management systems. In addition, important advancements are underway in systems such as conventional turbine engines and high-speed (supercavitating) torpedoes.

In response to advances made in technologies to achieve prompt strike weapons, the Advanced Propulsion Test Technology project has been renamed to High Speed System Test (HSST) to address test technology needs beyond propulsion testing, including aerodynamic and aerothermal testing, so that the test community has the technology to support the required test scenarios for concepts under development in the science and technology (S&T) community. Furthermore, the technology development efforts within the HSST project have been re-prioritized to align to Secretary of Defense guidance on S&T priority investments for FY2013-2017. The HSST project is developing advanced test and evaluation (T&E) technologies for ground test (both advanced propulsion and aerodynamic/aerothermal testing), for open-air range flight test, and for advanced computational tools, along with instrumentation and diagnostics systems that could be used both in ground tests and flight tests of high speed systems.

The HSST project develops technologies to enable robust, accurate, and timely T&E of these future weapon systems. Department of Defense (DoD) acquisition regulations require weapon systems to undergo a thorough T&E process to detect deficiencies early and to ensure system suitability and survivability. However, the extreme environments in which these weapons operate 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, productivity, modeling and simulation (M&S) fidelity, and range safety.

The HSST mission is to provide test technologies that will enable high-speed and hypersonic weapon systems to be successfully developed through accurate, robust, and efficient T&E.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: High Speed Systems Test	26.198	19.327	20.611
FY 2011 Accomplishments: Significant advancements were made in ground test technologies for both air-breathing propulsion and boost/glide weapons, development of new flight test capabilities, demonstration of new instrumentation for ground and flight test, and release of new M&S tools. Analysis and reporting were completed on the results of a scramjet engine test program conducted in a specially designed ground test facility showing, for the first time, effects of using "vitiated air" (air contaminated with the products of combustion) on the performance of a hydrocarbon fueled scramjet engine. Current production ground test facilities can only create the			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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: *High Speed Systems Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
high temperature inlet conditions necessary for scramjet engine tests by burning fuel in the airflow prior to entering the engine. The resulting "vitiated air" has different gas properties than clean air which significantly affects the engine's performance and introduces artificiality in the test environment and errors in predicted flight performance. These landmark reports will improve the understanding of results from existing vitiated T&E facilities, help explain flight test results, improve the accuracy of M&S, and guide investments in future T&E capabilities. Tests were also completed comparing the performance of identical engines in impulse and blow down aero propulsion facilities in order to quantify the accuracy of the different test methods. The tests revealed significant differences, providing the T&E community with important new information to guide future weapon system test plans. Two new technology developments were initiated to develop the test techniques necessary to accurately test large scramjet engines in our existing national facilities which would otherwise be deemed too small a scale for accurate measurements. One effort will evaluate a means of truncating the long inlet section of an engine while still accurately replicating its performance. The other effort will quantify and improve the accuracy of direct connect and semi-free jet test techniques by comparing them to a benchmark free jet test. Collectively, all of the aforementioned technology developments will allow weapons system developers to maximize the use of our existing infrastructure and better understand test results, thereby reducing flight test and acquisition risks. The two key technologies necessary for revolutionary improvements to the accuracy and productivity of aero propulsion ground test are clean air heat addition (i.e. non-vitiated air) and variable Mach number test capability. Component technologies for these desired capabilities were previously developed by the T&E/S&T program and are now being incorporated into a small scale, clean air, variable Mach number, aero propulsion test facility. Integrating these technologies into an operational facility will complete their development to Technology Readiness Level 6, provide an on-going test asset to the DoD, and provide risk reduction for construction of a full scale facility. Significant progress was made this year with the completion of all Phase I design work, fabrication of the heater's pressure vessel, and initiation of production of the yttria-stabilized-zirconia heat storage bricks and the modifications required for integration into an existing host facility. Understanding ablation characteristics of thermal protection systems is critical for maneuvering reentry and boost/glide vehicles. A new electrode design that increases arc jet facilities' maximum enthalpy (available energy to simulate flight conditions) and run time, was successfully demonstrated this year allowing for more realistic tests of leading edge materials. Additionally, a new test technique was established 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. Final tests in this technology development were successfully conducted at Mach 8 and 14 with a boost-glide vehicle nose tip. Advances in flight test technologies included advances in flight termination technology and flight maneuvers. Hardware-in-the-loop testing and final design of a flight rated, autonomous flight termination system were completed. The autonomous flight termination system is designed to assure destruction of an errant hypersonic vehicle if it leaves its designated safety corridor. Advanced parameter identification maneuvers were designed, qualified, and programmed into the flight computer of the second			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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: *High Speed Systems Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013

X-51 flight. These special maneuvers are designed to collect far more stability and control data per flight than possible using traditional methods thus reducing the number of flight tests and costs.

Progress was also made in advanced high speed systems test instrumentation. Fabrication of a flight-weight, laser-based, non-intrusive measurement system was completed for an upcoming flight test. A similar laser-based system for ground testing was transitioned and is being used in a hypersonic wind tunnel. Further advancement of this technology is being made by utilizing newly available lasers operating in the mid-infrared spectrum to significantly lower measurement uncertainties. Design and fabrication of a miniaturized, temperature compensated wind tunnel balance specifically addressing a T&E gap in supersonic store separation capabilities was completed. Finally, testing of a fiber optic heat flux gauge was also successfully completed.

Investment in a state-of-the-art validated computational fluid dynamics tool culminated in release of an updated version to the hypersonic community that can simulate the complex flows within scramjet engines and includes physical modeling for turbulence, fuel-air combustion, and heat transfer. The code was successfully used to model combustion phenomenon in a scramjet engine.

FY 2012 Plans:

FY 2012 will see continued efforts to improve hypersonic ground test capabilities to levels required for acquisition programs including demonstration of new flight test techniques, improvements in instrumentation, and continued validation/improvement of computational fluid dynamics codes.

Scramjet ground tests in free jet, semi-free jet, and direct connect test modes will be conducted to quantify their respective accuracies and identify optimal test methods for larger, next generation scramjet engines. Further vitiation effects data will be collected to increase the community's knowledge base.

Phase I work to integrate advanced ground test component technologies into a clean air variable Mach hypersonic aero propulsion facility will be completed with the clean air heater being demonstrated to Mach 8 temperature levels. Phase II work will be initiated including design of the variable Mach number nozzle and fabrication of components to vary set conditions.

Testing of improved arc jet facility electrodes will be completed enabling greatly improved T&E of maneuvering reentry and boost/glide vehicles. A technology for enabling propulsion testing beyond Mach 8 using magnetohydrodynamics to accelerate flow ionized by electron beams will be demonstrated.

Advanced flight parameter identification maneuvers will be demonstrated during an upcoming X-51 test. A flight-weight, laser-based, non-intrusive combustion gas analysis system will be demonstrated on a HIFiRE flight and development of a more accurate, mid-IR laser based system will continue. Construction and testing of a miniaturized, temperature compensated wind tunnel balance for supersonic store separation will be completed.

Validation and improvement of the computational fluid dynamics codes will continue, making use of the unique datasets obtained from the scramjet engines tests mentioned above.

FY 2013 Plans:

Continuing efforts in FY 2013 will be centered on completion of Phase II of the clean-air, variable Mach number development, including completion of the variable Mach number design and demonstration of clean air aero propulsion testing up to Mach 8.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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: *High Speed Systems Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
This phase will culminate with demonstration of the technology to vary pressure, temperature, and enthalpy with fixed nozzles up to Mach 8 conditions. Testing for vitiation, test methodology and scale effects will conclude and cumulatively provide the most extensive examination of hypersonic aero propulsion methods yet accomplished and will enable significant improvements in the quality of data provided to weapon system developers and computational fluid dynamics tool developers. Work on a new mid-infrared non-intrusive flow measurement will conclude in FY 2013. New test technology efforts will be 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; new and more accurate instrumentation systems; and application of advanced test technologies to other needs such as gas turbine engines, electromagnetic rail guns, and supercavitating torpedoes.			
Accomplishments/Planned Programs Subtotals	26.198	19.327	20.611

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
2: *Spectrum Efficient Technology*	7.755	9.608	8.140	-	8.140	7.770	10.401	10.380	11.425	Continuing	Continuing

A. Mission Description and Budget Item Justification

Weapon systems have become drastically more complex in recent years, resulting in the need for significantly more data to be passed among these systems, and between the systems and our test infrastructure. A vast amount of data must be collected, transmitted, and analyzed, which requires a large amount of spectrum resources. However, the amount of radio frequency spectrum designated to support test and evaluation (T&E) is decreasing, most notably due to reallocation for commercial use. The combination of decreasing radio frequency spectrum and increasing data requirements results in an urgent need to create test technologies that maximize the use of spectrum resources for Department of Defense (DoD) T&E operations.

The L and S frequency bands are the traditional spectrum allotted for military use. The explosive need for spectrum in the commercial sector has resulted in reallocation of portions of these bands to industry. To compensate, DoD was authorized to use the C-Band spectrum which offers numerous benefits, including a three-fold increase in available bandwidth, but comes with technical challenges. Most notably, our current 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. For instance, commercial telemetry transmitters operating in C-Band exist but do not have the form factor (size and weight) or packaging (not ruggedized) to survive airborne test applications.

Traditional telemetry applications employ streaming telemetry where data is moved one-way from the instrumented system under test to our test infrastructure. Modern network based telemetry capabilities, like those being developed by the Central Test and Evaluation Investment Program (CTEIP), enable more robust/efficient bidirectional transfer of data. DoD's strategy is to create technologies for streaming telemetry capability in C-Band, opening up legacy L- and S-Bands for networked telemetry usage.

The Spectrum Efficient Technology (SET) project is developing test technologies that enable more efficient use of legacy telemetry bands and expansion into non-traditional areas of the radio frequency and optical spectra at DoD test ranges. These technology advancements will address both the growing data requirements of warfighting systems and the limited availability of spectrum to support testing. The technology development efforts within the SET project have been re-prioritized to align to Secretary of Defense guidance on science and technology priority investments for FY2013-2017. The SET project is structured to develop test technologies to advance range communications, networked telemetry capabilities, and enhanced management of spectrum at DoD test ranges.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Spectrum Efficient Technology	7.755	9.608	8.140
FY 2011 Accomplishments: The SET project developed technologies to meet networked telemetry requirements and perform risk reduction for CTEIP. Technology enabling the dynamic reconfiguration of transmitted test data over a telemetry network was further matured. Policy-based (i.e., predefined technical rules for equipment configuration) management tools to optimize data throughput and increase spectrum utilization was matured. Spectrum and network management technology continued, with a focus on capabilities that allow for dynamic distribution of spectrum resources amongst test participants. The spectrum management technologies matured			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

by SET provided risk reduction in support of spectrum management needs exacerbated by spectrum selloff activities. The SET project matured and demonstrated the capability of a radio network to rapidly change operating frequencies based on policies in the presence of non-cooperative interference, thus maintaining connectivity with no perceivable impact on telemetry network performance. Additionally, the SET project initiated the development of a three dimensional channel model tool for modeling and simulation of telemetry channels in various environments to provide higher fidelity simulations for use in researching the effects of terrain and other factors on telemetry channels. The SET project also initiated efforts to address a CTEIP requirement for networked test articles to operate between various test ranges without losing data connectivity.

Development continued on advanced waveform technologies to increase radio frequency bandwidth efficiency. A networked telemetry transceiver using an advanced waveform was developed and tested as a risk reduction effort for the CTEIP integrated Network Enhanced Telemetry (iNET) development. The SET project initiated an effort to develop a networked data recorder to provide risk reduction in support of iNET development. Efforts continued in developing forward error correction schemes for use in aeronautical telemetry to increase data reliability in dynamic test environments. A Space Time Code implementation and associated hardware prototypes were demonstrated to show significant improvement in data reliability in highly dynamic multiple airborne antenna installations.

The SET project investigated techniques to expand telemetry operations into non-traditional spectrum bands by characterizing multipath effects in multiple range environments. Development of a wideband power amplifier capable of efficiently operating with advanced waveforms within the traditional telemetry bands was matured to increase efficiency in spectrum utilization. Additionally, SET initiated efforts to develop airborne phased array antenna technology that will enable flexible 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, reduce the amount of infrastructure modifications needed to implement a C-Band telemetry capability, and provide over-the-horizon data connectivity to test articles such as missiles.

FY 2012 Plans:

The SET project will further advance 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 the test ranges. Technologies to develop advanced waveforms designed to increase bandwidth efficiency will be matured. The development of advanced waveforms will enable the telemetry network to support multiple high data rate test assets and increase efficiency and spectrum utilization. Development of a networked data recorder in support of iNET continues. Development of technology to enable inter-range data connectivity continues. Technologies to develop a three dimensional channel model tool used in modeling and simulation of telemetry channels in various environments will be matured. Emphasis will be placed on development and maturation of technologies required to expand telemetry operations in other frequency 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. The SET

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
project will initiate efforts to develop an airborne multiband transceiver to support networked telemetry, increase spectrum scheduling efficiency, and support two-way data transmission of the telemetry network in both traditional and C-bands. Development of forward error correction schemes for use in aeronautical telemetry to increase data reliability will be completed and transitioned to ranges. Additionally, SET will begin an effort to provide risk mitigation and transition to iNET in the area of optimizing transmission synchronization parameters. ***FY 2013 Plans:*** The SET project will initiate development of radio technology that can utilize alternate spectrum in the upper frequency bands. These efforts will determine the feasibility of some of the upper bands for use in telemetry. Additional efforts on alternate data link technologies in the optical realm will be initiated. If efforts in this area are successful, these technologies can provide augmentation to the existing telemetry bands. The SET project will continue efforts to mature phased array technology for use on the ground as well as in airborne applications. The high directionality of phased array antenna technologies on aircraft will enable the ability to leverage spectrum spatial reuse techniques for more effective spectrum scheduling. The SET project will begin investigation and development into systems that will provide autonomous self forming telemetry networks to provide connectivity in flight line and other areas that currently suffer from limitations in communications coverage caused by buildings, terrain and multipath fading effects. Work will be completed on forward error correction schemes for use in aeronautical telemetry to increase data reliability. Efforts will complete the development of a three dimensional channel model tool used in modeling and simulation of telemetry channels in various environments. Additionally, continued efforts will provide risk mitigation and transition to iNET in the area of optimizing transmission synchronization parameters for use with the iNET radio network. Efforts will continue to facilitate mobility of test articles between iNET network instances. The SET project will continue work on the development of a networked data recorder to provide risk reduction in support of iNET capability. The SET project will complete work to mature technologies in optimization and management of the telemetry networks through spectrum management tools designed to optimize spectrum utilization.			
Accomplishments/Planned Programs Subtotals	7.755	9.608	8.140

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 2013 Office of Secretary Of Defense			DATE: February 2012
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: *Electronic Warfare Test*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
3: *Electronic Warfare Test*	17.419	19.912	18.206	-	18.206	13.542	12.110	15.905	18.570	Continuing	Continuing

A. Mission Description and Budget Item Justification

Readily available, infrared (IR) seeking, man-portable air defense systems (MANPADS) are difficult to detect and pose an imminent and lethal threat to military aircraft of all types. Our ability to counter such threats is essential to owning the airspace in theater. Therefore, the ability to test missile warning systems (MWS), hostile fire indicators, infrared countermeasures (IRCM), and advanced sensors is critical to our national defense. Additionally, a new generation of enemy radio frequency (RF) missile seekers is both currently fielded and in further development, requiring a correspondingly new generation of test technologies to test the latest countermeasures. The test and evaluation (T&E) community is required to test IRCM and RF countermeasure systems in a repeatable manner with validated ground-truth data before and after integration into warfighting systems. Without new test technologies, the Department of Defense (DoD) will be unable to perform adequate T&E of advanced countermeasure systems.

In response to Secretary of Defense guidance on science and technology priority investments for FY2013-2017, the T&E/S&T program restructured and reprioritized on-going Multi-Spectral Test (MST)technology efforts to address emerging Electronic Warfare/Electronic Protection test needs. Accordingly, the MST project was renamed to the Electronic Warfare Test (EWT) project, to align with the Department's priorities. The EWT project is focusing on the test needs in both the electro-optic (EO) and the radio frequency domains, and by concentrating on the core test technology needs, technical advancements in this area have applicability to other EO and RF test requirements, such as in fire control systems, reconnaissance sensors, and missile seeker subsystems.

The EWT project develops test technologies to stimulate IRCM and RF system sensors through the high-fidelity simulation of scenes viewed by the sensors. Stimulation can be as simple as testing to see if a system under test responds to an image or as complex as simulating battle phenomena to measure the response of a system under test in a more relevant, cluttered scenario. Simulations and stimulations are used at open air ranges (OAR) and in installed system test facilities (ISTF), and in hardware-in-the-loop (HWIL) test beds.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Electronic Warfare Test	17.419	19.912	18.206
FY 2011 Accomplishments: The EWT project has made progress developing the technology for the high-temperature scene emitter for the Central Test and Evaluation Investment Program (CTEIP) Joint Distributed IRCM Ground-Test System (JDIGS) development, which is improving the DoD test capabilities for directional infrared countermeasures (DIRCM) systems. For example, the EWT project is in the final stages of testing a new superlattice light-emitting diode source that can provide two-color, high-temperature scenes with a frame rate fast enough to test new IRCM and missile warning systems. The EWT project has made significant progress with read-in integrated circuit technology, which supplies electrical energy to emitters that generate images in ISTF and HWIL test facilities. This technology is preparing for final testing before transition. Most significantly, this read-in integrated circuit technology will make future DoD development of scene projectors more affordable			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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: *Electronic Warfare Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
since it is capable of supporting a variety of next generation of emitters, of which several are currently in development within the EWT portfolio. The EWT project initiated an effort to develop a breadboard capability to produce high-fidelity electronic counter-countermeasures radar signal processing techniques that employs sophisticated waveforms with algorithms, such as adaptive filtering. This technology development is to address a need identified by the Navy-led, CTEIP-sponsored Tri-Service Electronic Warfare Test Capabilities Study, to improve testing against modern surface-to-air missile threats. ***FY 2012 Plans:*** Risk reduction activities for the CTEIP in testing MWS in integrated ISTF and HWIL will continue. The EWT project will concentrate on addressing new test technology needs identified in the update to the IRCM Test Resource Requirements Roadmap. Furthermore, EWT technology developments will focus on stimulating synthetic aperture radars with radio frequency injection, including realistic background clutter, and research will be conducted for testing wide area emitters. To address the testing of systems operating in the mid-wave infrared band, the EWT project 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. Furthermore, efforts to develop technology to test against electronic counter-countermeasures techniques of modern surface-to-air missiles will continue. ***FY 2013 Plans:*** The EWT project will add in new technologies related to improving the electronic warfare T&E infrastructure. These new technologies will be identified by the Tri-Service EWT working group formed in FY 2011, and further address test needs identified in the IRCM Test Resource Requirements Roadmap and the Tri-Service Electronic Warfare Test Capabilities Study.			
Accomplishments/Planned Programs Subtotals	17.419	19.912	18.206

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
4: *Advanced Instrumentation Systems Technology*	7.710	10.618	10.150	-	10.150	9.021	11.072	12.413	12.049	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Advanced Instrumentation Systems Technology (AIST) project addresses the test technology gaps resulting from emerging weapon systems that need to be tested at Department of Defense (DoD) open air ranges, undersea ranges, installed systems test facilities, hardware-in-the-loop laboratories, and measurement test facilities. Instrumentation requirements for systems under test are increasing exponentially for new weapons systems. On-board and wearable 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; recording human operator performance; and storing and transmitting data. The technology development efforts within the AIST project have been re-prioritized to align to Secretary of Defense guidance on science and technology (S&T) priority investments for FY2013-2017, particularly in support of human systems, engineered resilient systems, and counter weapons of mass destruction. The AIST project has been concentrated to support technology developments for advanced Time Space Position Information (TSPI) instrumentation (especially with limited or no use of the Global Positioning System (GPS)), advanced sensors, advanced energy & power systems for instrumentation, non-intrusive instrumentation, mitigating range encroachment issues, and measuring warfighter cognitive performance.

The AIST project 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; furthermore, additional weight and power draw can adversely affect weapon system signature and performance. Instrumentation for humans-in-the-loop, such as dismounted soldiers, is required to not adversely affect soldier performance, induce artificiality in the test environment, nor create operational burden. New technologies can be exploited to integrate small, non-intrusive instrumentation into emerging 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 a continual feedback loop between the developer, test personnel, and operators.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Advanced Instrumentation Systems Technology	7.710	10.618	10.150

FY 2011 Accomplishments:

The warfighter must be able to conduct military operations in a diverse array of locations, to include urban, mountainous, and densely forested environments. Consequently, a continued major thrust for FY 2011 included the development of test technologies to support collection of TSPI data for soldier systems (manned or unmanned), particularly in GPS-denied or degraded situations, such as in urban areas and tunnels. A wideband local positioning system was developed to locate soldiers and unmanned ground systems in GPS-denied/impaired areas using radio frequency waveforms and techniques that penetrate structures found in urban environments. Test results indicate that position accuracy less than one meter can be achieved with

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

radio frequency signals going through up to four concrete block walls, which constitutes typical structural conditions encountered in urban operations.

To support testing high-acceleration systems, an ultra-high dynamics GPS receiver was developed that performs significantly better than existing test instrumentation. In preliminary tests, the prototype ultra-high dynamics GPS receiver demonstrated the ability to acquire satellite signals at velocities up to 5.0 kilometers per second (km/s) and during accelerations at 50-1100 times the force of gravity. As a result, position solutions were obtained at velocities up to 10 km/s with time-to-first-fix under 0.5 seconds, which is important for testing air-to-air missile systems launched from under the wing or from a weapons bay.

Other major development areas in FY 2011 included the development of advanced sensor instrumentation technologies (non-intrusiveness, miniaturization, and hardened for harsh environments). A probe was developed for simultaneous analysis of turbine engine exhaust products (i.e., carbon, nitrogen, water vapor, and hydrocarbons) and will be used in ground testing of the C-17 engine. Technology investments are also being applied to develop a fiber-optic instrumentation test suite capable of measuring electric and magnetic fields to support testing electromagnetically-propelled weapons.

Additional efforts to test systems that operate in a GPS-denied environment include a technology that enables networking of GPS-enabled systems within the test environment, and then 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. Simulation results indicate that this technology will deliver high accuracy tracking performance upon completion. A related technological approach employs a layered system of navigation sensors leveraging collaborative navigation, existing radio frequency ranging technology, and a Doppler velocimeter to achieve more precise positional information.

Several new efforts were initiated in FY 2011. A holographic optical memory system was designed for data recording and retrieval, extending the data storage capacity of current state-of-the-art holographic memory up to 16 terabytes. An attachment technology initiated development with new adhesive formulations that employ an electrically releasing foil patch, for use in attaching sensors to non-conductive painted exterior surfaces of aircraft and other combat vehicles, significantly improving the turnaround time to return the system under test back to its operational configuration. To improve testing at DoD undersea range complexes, algorithms and methodologies were investigated to automate detection and classification of marine mammal vocalizations from ocean floor range sensors. This test technology will allow the Navy to conduct critical test and evaluation (T&E) events without jeopardizing marine mammal populations. Boot-mounted sensors were investigated to track the geolocation of dismounted war fighters with sub-meter accuracy during testing. Additionally, an effort has been initiated to leverage microsystems technology under development at universities, the Defense Advanced Research Projects Agency, and government laboratories that will be applicable to T&E of modern war fighting systems.

FY 2012 Plans:

Numerous systems now being brought to theater by rapid acquisitions involving operations in extreme conditions, over long distances, for long durations, and often with very small physical footprints (i.e. microsystems). Furnishing adequate energy and power to instrument such systems for testing is a significant technological challenge. Major thrusts for FY 2012 include continuing

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
the FY 2011 efforts in advanced sensors, TSPI instrumentation, and advanced data acquisition and transformation along with the development of advanced power sources for test instrumentation. The AIST project will develop hardware prototypes of GPS nodes with radio frequency inter-node ranging capabilities and ad hoc network connectivity for technology demonstrations in a GPS-degraded environment. Magnetic field sensors will be tested with an air gun and developed to survive the harsh environment of an electromagnetic rail gun firing. The AIST project will complete algorithm optimization development and the application specific integrated circuit architectures with high dynamic, multi-frequency, anti-jamming capability to provide TSPI in GPS-denied environments. This test technology will support range safety, system analysis, T&E mission optimization, and end game scoring of highly dynamic objects. ***FY 2013 Plans:*** The AIST project will initiate efforts to develop 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. Advanced sensor initiatives for non-intrusive applications will include multimodal transducers, and self-registering/self-calibrating sensors. Sensing applications include weapon system orientation, body armor blunt trauma evaluation, war fighter body posture and 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 wearable instrumentation, military vehicle instrumentation, embedded sensors, and weapons systems. Advanced data transformation initiatives will develop technologies for adaptive computing, self-configuration, and self-calibration of instrumentation. Additional goals include virtual/synthetic instrumentation measurement capabilities, self-configuration data reduction, data compression, and wireless on-board data transport and massively dense data storage. Other areas of interest include data management techniques, decrease size, weight, and power (SWaP), and micro-miniaturization of electronic components. In addition, technology initiatives will be considered for reducing/eliminating range environmental encroachment issues, and war fighter cognitive performance assessment and measurement.			
Accomplishments/Planned Programs Subtotals	7.710	10.618	10.150

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
5: *Directed Energy Test*	18.283	13.819	8.681	-	8.681	6.496	6.779	6.769	6.581	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) is exploring the military utility, safety, and suitability of directed energy weapons. A robust test capability to assess directed energy weapons is essential to understand their effectiveness and limitations, including determining their efficiency to perform counter improvised explosive device (C-IED) operations. Such assessments will depend upon knowledge acquired through the test and evaluation (T&E) of the directed energy technologies and testing of operational concepts. Directed energy weapon technologies, primarily consisting of high energy lasers (HEL) and high powered microwaves (HPM), are outpacing available test capabilities. Traditional test techniques for evaluating conventional munitions (with flight times ranging from seconds to minutes) are not sufficient for the T&E of directed energy weapons that place energy on target instantaneously. Consequently, new test 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.

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 HEL and HPM threats are required to be characterized in accordance with Military Standard (MIL-STD)-464C. Current test capabilities do not provide the detailed data required to understand directed energy system performance and effects.

The Directed Energy Test (DET) project 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. The technology development efforts within the DET project have been re-prioritized to align to Secretary of Defense guidance on science and technology priority investments for FY2013-2017.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Directed Energy Test	18.283	13.819	8.681
FY 2011 Accomplishments: To assess HEL energy on target, sensor array designs have been developed to directly measure high irradiance across laser spots on target materials. Additional developments have produced alternative sensor array designs to measure the temperature maps on the back surface on a HEL-irradiated target and alternative inverse heat conduction algorithms to estimate the temperature on the front (HEL-heated) surface. In this same HEL area, a hyperspectral sensor system that remotely measures radiance from an HEL spot on the target and applies an algorithm to calculate the target front surface temperature has been designed and is under fabrication. In the area of HEL effects on target, an adaptive optics system has been designed that will allow improved remote imaging of an HEL spot on a remote target. A prototype is under fabrication and is designed to be readily adaptable to telescopes at various test facilities.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
In the area of HEL atmospheric propagation, a multi-light detection and ranging system to measure important atmospheric profiles along a slant path adjacent to the HEL beam propagation path is being fabricated. This one system measures profiles for three parameters: optical turbulence, water vapor content, and aerosol attenuation. Addressing the HPM energy at the source,a flash X-ray characterization prototype provided the capability to successively image explosively generated HPM prime energy to understand why expected increases in capability with more energetic explosives was not being realized. At least one of the issues with achieving explosive source expectations was revealed during the field testing of this prototype. In the area of surrogate shooters to support the recently approved MIL-STD-464C requirements, a high frequency wideband prototype was delivered providing the required fields on target, while also being capable of achieving significantly greater power. As a result, the transition partner has requests from several organizations to test concepts for advanced systems using the source. Several prototypes were delivered to improve HPM test tempo in MIL-STD-464C test activities including rapid polarization changes and broad power variation. The demonstrated test technologies have wide application to other HPM test sources. A test technology supporting both HPM energy on target and effects on target was demonstrated. This capability measures the electric field arriving at eight locations on the target and the temperature rise resulting from those fields. A family of HPM sensors demonstrated test technologies for measuring energy inside larger targets during HPM engagements. The sensor technology can be used singly or in combination to non-intrusively measure electric and magnetic field vectors at the same location. After promising field tests, the National Institute of Standards and Technology is now characterizing the performance of these new sensors so they can be adopted by the test ranges as authoritative data collection devices. Early testing of electric field sensors for support of electromagnetic rail gun testing identified a prime source for examined rail wear, a key issue for rail gun systems. To better support C-IED testing, the test technology development to measure soil electrical properties built a brass board sensor with three interchangeable heads to cover the required frequencies. The brass board has been used in proving the concept to measure the soil electrical properties for portions of the test site, with results showing measurements similar to those taken by legacy technologies. An advantage of the new test technology is that it measured in 20 minutes what the legacy measurements systems could do in two months.			
FY 2012 Plans: Within the HEL area, efforts will focus on completing the technology developments for measuring energy on target and characterizing effects on target using onboard sensing. The performance of these matured technologies will direct the focus of future investments to optimize HEL measurement capabilities. New efforts will be initiated to address identified areas of technology shortfalls, including HEL test safety and HEL collateral effects. In addition, test technologies will focus on 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. Test 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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 prototype to measure soil electrical properties will be matured to determine the soil depth to which the new technology can measure while adding the ability to determine if the magnetic properties of soil are interfering with the advanced technique. The initiatives to achieve very small non-intrusive electric and magnetic field sensors will be completed to measure HPM effects inside a target and transitioned to at least two locations to demonstrate the flexibility of this technology. The widely dispersed HPM data recording and wireless reporting effort will be completed supporting the CHAMP demonstration and then be transitioned to initially support rapid testing of C-IED systems and fratricide issues with other ground HPM systems. A smaller less intrusive data acquisition device with a wide bandwidth to match that of the non-intrusive electric and magnetic field sensors will be investigated. The capability to characterize the Terahertz beam quality in support of testing the proliferating number of Terahertz sensors and detectors for force protection and explosives or biological hazards determination will be transitioned. A risk reduction effort will be performed to determine the best approach to construct a more durable pressurized – radio frequency transmitting dome that does not leak over time for a test capability that emulates wideband threats.			
FY 2013 Plans: Investments in HEL will assess and target the changes in HEL effects due to the shift of HELs to shorter wavelengths near 1 micron. Such HELs include solid state, fiber, and free electron laser systems. Test technologies to support the testing of HEL energy on target will continue to be advanced. As 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, 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. In the HPM area, measuring the actual cause of HPM electronics effects will be addressed by electrical current measurements in the wires and chips of the electronic targets. To better support weapon research and design, a method will be sought to determine the time out of action for targets, such that HPM effects on targets need not be permanent. In weapons development testing, these sensors will indicate how much increase in HPM weapon output is required to make a weapon effective. In survivability testing, these sensors will support assessment of susceptibility with lower power HPM sources. Additionally, the DET project will address technology for small, powerful HPM sources to allow testing of the susceptibility of United States equipment in a chamber environment. A new effort will be initiated to develop a technologically viable alternative to provide the neutron radiation required for nuclear survivability testing.			
Accomplishments/Planned Programs Subtotals	18.283	13.819	8.681

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
6: *Netcentric Systems Test*	12.465	17.428	17.255	-	17.255	16.724	12.290	12.270	11.270	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Net-centric Systems Test (NST) project is pursuing test technologies to emulate multi-Service, Joint, and coalition net-centric operations in a system of systems test and evaluation environment and to analyze and evaluate the increasingly massive amounts of structured and unstructured data generated by complex net-centric tests. Information systems and weapon/sensor platforms that support the kill chain in a Joint operation must provide an accurate transfer of timely data (e.g., target tracks, weapons allocation, mission tasking and situational assessment), as it passes among different systems, Service, and coalition participants. The NST technologies advance test automation (test planning, test execution, test control, and analysis) that enable the virtual integration of Department of Defense (DoD) weapon laboratories and open air ranges. Using models and simulations along with 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 systems accessing and providing information to the Global Information Grid. The technology development efforts within the NST project have been re-prioritized to align to Secretary of Defense guidance on science and technology priority investments for FY2013-2017, particularly in measuring “Data to Decision” techniques and warfighting capabilities. Ultimately, 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 2011	FY 2012	FY 2013
Title: Netcentric Systems Test	12.465	17.428	17.255
FY 2011 Accomplishments: The NST project emphasized 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 (LVC) environment and controlling test execution through management of the mission scenario. The NST project developed test planning technologies to address test integrations and interoperability issues. Ontologies were developed to formalize concepts pertaining to LVC test resources in a net-centric joint mission environment. Knowledge bases were developed that capture subject matter expertise on setup and execution of a test event and characteristics of test resources. Reasoning capabilities were extended and integrated to automate test planning tasks. The NST project developed a planning/visualization technology to support joint mission thread testing to better correlate test data to the effectiveness of mission operations. The NST project 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). The NST project is investing in technologies to test military systems that employ Service-Oriented Architectures (SOA), including test technologies to help the tester understand what is happening inside of and between SOA services and resources during test events. These test technologies will allow the tester to understand the environment, including but not limited to network hardware			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

and software. The NST project also developed technologies for the next generation of TENA middleware that support a broad range of networks, including wireless networks, and provide native support for handheld and embedded computing platforms.
The NST project transitioned test technologies to the Central Test and Evaluation Investment Program (CTEIP) Interoperability Test and Evaluation Capability (InterTEC) development that will provide the capability to automate testing of the Net-Ready Key Performance Parameters (KPP) solution architecture element. In addition, this test technology will perform compliance assessments of architectures against governing standards and allow a tester to plan a test event based on authoritative Joint mission threads. The test technology will also allow the tester to visualize the execution of mission threads by mapping the progress of the test to architecture views. An additional FY2011 NST transition involved technologies that will ingest test plans and provide automated, rule-based control of the test infrastructure during a large-scale complex test event.
Finally, the NST project transferred two on-going cyberspace test technology developments to the new Cyberspace Test project, which would be better suited within that portfolio.

FY 2012 Plans:

The test 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. The NST project will also focus on test technologies to extend the TENA Meta-Model to address emerging security and trusted systems requirements, as well as extend TENA into embedded instrumentation and smart devices, including optimizing data structures to operate more efficiently over wireless networks. Additionally, the NST project 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 Joint mission threads.
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.

FY 2013 Plans:

The NST project will focus predictive smart dead-reckoning technology to address the challenge to adequately synchronize the distributed test environment. This effort will leverage the ultra-high-speed policy-enabled agent and the policy server to provide the necessary distributed intelligence to manage time space position information (TSPI) updates in the net-centric test battlespace with a distributed LVC architecture. To accomplish this capability, the NST project will build upon previously developed technologies by NST and add additional capabilities to solve the test challenges of producing accurate TSPI predictions under all network conditions, to include both unpredictable network latency and missing information. The predictive smart dead-reckoning technology will include capabilities, such as highly accurate clock synchronization, fast clock convergence under unreliable network conditions, and fast TSPI calibrations. Since the predictive smart dead-reckoning technology will be built on top of the policy-enabled agent, it will be able to provide fast response under complex test event conditions.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
NST project will continue developing technology that will automate the planning of test events, based on advanced semantic web technology. Development will continue on technologies to support the use of TENA over a broad range of networks and to provide a common interoperability test architecture.			
Accomplishments/Planned Programs Subtotals	12.465	17.428	17.255

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
7: *Unmanned and Autonomous System Test*	2.405	3.296	5.863	-	5.863	9.308	13.369	15.348	14.883	Continuing	Continuing

A. Mission Description and Budget Item Justification

Unmanned and Autonomous Systems (UAS)support every domain of warfare, operating in space, in air, on land, on sea, undersea and in sub-terrain conditions to support a vast variety of missions. UAS is experiencing exponential growth in technological capabilities and employment in current operations. The emergence of robotics brings a host of revolutionary capabilities that will profoundly influence warfare. The Unmanned and Autonomous Systems Test (UAST) project addresses current and emerging challenges associated with the test and evaluation (T&E) of these critical warfighting capabilities. The UAST project is developing test technologies to simulate, 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 in the context of mission execution. The technology development efforts within the UAST project have been re-prioritized to align to Secretary of Defense guidance on science and technology priority investments for FY2013-2017, particularly in assessing autonomy.

The UAST project will provide the test technologies to effectively measure performance and characterize risk, thereby increasing the warfighter's trust in autonomous systems. Current Department of Defense (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 collaborating 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 and intelligent systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Unmanned and Autonomous System Test	2.405	3.296	5.863

FY 2011 Accomplishments:

The UAST project focused on investments in predicting and assessing the autonomy functions of unmanned and autonomous systems through the initiation of a series of new technology developments. The complexity of operational unmanned and autonomous systems, with all possible interactions occurring between sensing, perception, reasoning, mapping, decision making and action, results in an almost infinite set of potential interactions and correspondingly, an almost infinite set of test conditions. An effort was initiated to employ evolutionary/genetic algorithms in a software-in-the-loop environment to accurately predict the fault conditions of a complex, long-duration autonomous system. Initially to be demonstrated on the Long Duration – Unmanned Underwater Vehicle, this test technology will improve the ability to predict fault conditions and thereby enable focused test strategies that dramatically improve the efficiency of testing.

An effort was initiated in the UAST project to develop test technologies that enable stress testing of UAS software at the interfaces of the core components without requiring source code, while being agnostic to the specific component interface. This test

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

technology will provide the tester with a perspective of system performance and an ability to predict behavior that is not currently available.

The UAST project has initiated a technology development to create a virtual UAS test bed that consumes environmental data from external sources (to include imagery from operational areas of interest) and injects that data into simulations of a given UAS to predict the behavior of the system in the operational environment. This technology will facilitate efficient testing in an operationally representative environment and allow for safe operations at “edge of the envelope” performance parameters.

FY 2012 Plans:

Efforts will focus on technology supporting the near term challenges identified in the 2011 – 2036 DoD Unmanned Systems Integrated Roadmap, such as, integrating DoD unmanned systems within the National Airspace and safely operating unmanned aerial systems within our national ranges. The UAST project will additionally explore investments in the challenges of testing autonomy, leveraging advances made in the standardization of UAS architectures, functional components, and interfaces.

The test technology to adapt evolutionary algorithms to predict fault conditions will be expanded to address evaluation functions for multiple missions of a long duration UAS. The effort to stress test UAS software will delve into technologies to integrate UAS models with software exceptions databases to allow for sharing of test data across multiple UAS platforms. The effort to create a virtual UAS test bed will complete its architecture, complete the terrain modeling, develop perceptual boosting algorithms based on vehicle sensors, integrate all sensor modules and simulation modules into a complete virtual test bed, and validate the complete system through comparison of the outputs of the models inside the virtual proving ground with real data acquired during field tests.

FY 2013 Plans:

The UAST project will deliver the technologies developed by the three on-going efforts. The UAST project will continue to invest in technology that addresses mid-term UAS test challenges (autonomy) and initiate efforts to explore the far term challenges of testing system intelligence. This effort will include an examination of test technologies that measure the logical flow of sensing data, to perception, decisions, and action. The UAST project will focus on enhancing the test environment to assess unmanned threat systems system mission capabilities, and to identify vulnerabilities. The UAST project will develop instrumentation and analysis technologies to enable UAS testing that furnishes data to support the evaluation of mission performance. Furthermore, the UAST project will invest in efforts to enable dynamic construction, control, measurement of complex systems-of-autonomous-systems and tactically meaningful counter-unmanned aerial systems analysis. 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. The UAST project 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 evaluation of multi-platform behaviors, supporting repeatable events, and detailed system/event logging. Modeling and

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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.			
Accomplishments/Planned Programs Subtotals	2.405	3.296	5.863

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 2013 Office of Secretary Of Defense			DATE: February 2012
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: *Cyberspace Test*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
8: *Cyberspace Test*	2.405	2.644	3.696	-	3.696	6.049	10.664	10.617	11.632	Continuing	Continuing

A. Mission Description and Budget Item Justification

In response to Secretary of Defense guidance on science and technology priority investments for FY2013-2017, the T&E/S&T program restructured planning in Multi-Level Security test technologies to refocus on addressing emerging Cyberspace test needs. Accordingly, the Multi-Level Security for test and evaluation (T&E) project was renamed to the Cyberspace Test project, to align with the Department's priorities. Furthermore, two technology developments, previously in the Net-Centric System Test (NST) portfolio, that were investigating creating representative cyberspace attack threat effects were re-aligned within the Cyberspace Test project. The Cyberspace Test project will address all test technology shortfalls in cyberspace testing, including planning cyberspace tests, executing cyberspace tests, and creating representative cyberspace threats. The Cyberspace Test project will develop high fidelity live-virtual-constructive (LVC) test environments to measure cyberspace attacks and countermeasures across all information technology stack layers, while leveraging cyberspace technologies being developed across the S&T community.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Cyberspace Test	2.405	2.644	3.696
FY 2011 Accomplishments: The Cyberspace Test project focused on initial planning to develop a cyberspace test technology roadmap to identify cyberspace test shortfalls and to outline a long range test technology investment strategy. Additionally, two technology developments, previous under the NST project, were moved to the Cyberspace Test project. These two efforts are developing techniques and algorithms to stimulate a wide range of network and host based effects resulting from a cyberspace attack. These two efforts developed test technologies to induce network internet protocol/host degradation and the ability to store and manage effects profiles. Furthermore, the Cyberspace Test project investigated strategies to provide the tester with the capability to measure the impact of cyber threats, such as, denial-of-service and virus/worm vulnerabilities.			
FY 2012 Plans: The Cyberspace Test project will continue focus on test technologies that will address the need to provide automated cyberspace test planning, set-up, and configuration; the need for a LVC test environment that will include cyberspace entities; and the need for real-time hardware-in-the-loop capabilities to simulate cyberspace threats. The Cyberspace Test project will also investigate using integrated cross-domain solutions and gateways to create complex cyberspace tests at multiple levels of security classifications. The Cyberspace Test project will also focus on threat cyberspace attack technologies required to assess information assurance and to improve the agility of cyberspace test capabilities. Additional efforts will focus on addressing the shortfalls identified in the cyberspace test technology roadmap.			
FY 2013 Plans: The Cyberspace Test project will continue to focus on test technologies that will address the need to provide automated cyberspace test planning (design, plan, set-up, and configure), particularly in support of Defensive Cyber Operations testing.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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: *Cyberspace Test*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
The Cyberspace Test project will also develop test technologies to federate a distributed cyberspace test environment to quickly integrate accredited cyberspace test tools. Additional efforts will focus on addressing the shortfalls identified in the cyberspace test technology roadmap.			
Accomplishments/Planned Programs Subtotals	2.405	2.644	3.696

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	19.842	-	-	-	-	-	-	-	-	Continuing	Continuing
P942: *Technology Transfer*	2.970	-	-	-	-	-	-	-	-	Continuing	Continuing
P949: *Technology Transition Initiative*	16.872	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

Change from FY 2011 to FY 2012 reflects reallocation of funds from Technology Transfer P942 to Department of the Air Force PE 0604317F and reallocation of Technology Transition Initiative P949 to higher priority DoD requirements.

A. Mission Description and Budget Item Justification

The Technology Transfer and Transition (TT&T) program element has two sub-elements: Technology Transfer (P942), and Technology Transition Initiative (P949).

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.

The Technology Transition Initiative (TTI), authorized by Title 10 and Section 242 of the FY 2003 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 TTI (P949) program inception in FY 2003, 78 projects have been initiated and 50 have completed. Of the 50 completed projects, 35 (70%) successfully transitioned to DoD Acquisition Programs of Record or procurement contracts for operational use and subsequent fielding.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	23.310	-	-	-	-
Current President's Budget	19.842	-	-	-	-
Total Adjustments	-3.468	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.900	-			
• SBIR/STTR Transfer	-0.212	-			
• Congressional Adjustments	-6.000	-	-	-	-
• Economic Assumptions	-0.088	-	-	-	-
• FFRDC	-0.063	-	-	-	-
• Other Program Adjustments	-0.005	-	-	-	-

Change Summary Explanation

Change from FY 2011 to FY 2012 reflects: 1) reallocation of funds from Technology Transfer P942 to Department of the Air Force PE 0604317F and 2) reallocation of funds from Technology Transition Initiative P949 to higher priority DoD requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P942: *Technology Transfer*	2.970	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

FY 2012 change from FY 2011 reflects reallocation of funds from Technology Transfer P942 to Department of the Air Force PE 0604317F.

A. Mission Description and Budget Item Justification

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) 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 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 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 2011	FY 2012	FY 2013
Title: Marketing of DoD technologies	1.713	-	-
FY 2011 Accomplishments: Continued active marketing of DoD-developed technologies to U.S. companies to establish PLAs to commercialize these technologies for both civilian and military applications. The objectives of this technology marketing activity were 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	0.817	-	-
FY 2011 Accomplishments: Actively promoted and brokered Cooperative Research and Development Agreements (CRADAs) between DoD labs and industry for development of technology with both commercial and military applications. This activity particularly focused on nontraditional defense contractors and was 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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
a wide variety of viruses that affect humans, wildlife, and livestock such as avian influenza in chickens. The CRADA provides for BVS to contribute the development of a comprehensive viral database at ECBC.			
Title: Spin-In of Advanced Commercial-Sector Technologies ***FY 2011 Accomplishments:*** Actively promoted 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 identify, fund, acquire, and integrate private-sector innovations and advanced commercial technologies into DoD systems.	0.440	-	-
Accomplishments/Planned Programs Subtotals	2.970	-	-

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P949: *Technology Transition Initiative*	16.872	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

FY 2012 changes from FY 2011 reflect reallocation of funds from Technology Transition Initiative 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 FY 2003 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 were initiated and 50 completed. Of the 50 completed projects, 35 (70%) 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 2011	FY 2012	FY 2013
Title: Electronic Image Intensifier for Pilotage (Army)	2.000	-	-
Description: This project integrates 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 (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 2011 Accomplishments:*** - Integrated prototype into Apache aircraft; completed aircraft qualification, operational flight testing and initiated procurement activities. - Successfully conducted two ground-based demos of the camera on an Apache in Yuma in March and May 2011.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Tested prototype in M-PNVS with integrated helmet and display sight system (IHADSS). - Delivered 4 pre-production prototypes. - Awarded Phase 3 contract to Intevac (February 2011). - Demonstrated operational prototype to PM Apache in an M-PNVS on an Apache helicopter (March and May 2011). - Evaluated camera performance at Army Night Vision & Electronic Sensors Directorate (NVESD) (February-March 2011). - Submitted all environmental qualification plans/procedures to Aviation Engineering Directorate (AED) (April-May 2011). - Received approval from AED on environmental qual test plans.			
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. ***FY 2011 Accomplishments:*** - Redesigned power source with a 36% volume reduction, and verified in high velocity ballistic firing. - Completed update of fuze circuit. - Completed S&A modification and verification. - EDF-11 explosive ink qualified for tri-service use. - Initiated automation of S&A build under ATK contract. Onyx platform performing all required operations.	1.200	-	-
Title: Precision Fires Image (PFI) 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	1.300	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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. ***FY 2011 Accomplishments:*** - PFI software is currently used operationally by United States Conventional and Special Forces. - Australia and the United Kingdom completed foreign military sales cases with the United States for PFI technology. - OSD (DARPA) resourced a "port" of the TTI PFI into a android operating system. - The U.S. Army sent Mobile Training Teams (MTT) into Afghanistan to instruct PFI to support Precision Guided Mortars. - Successfully transitioned into the US Army Pocket-Size Forward Entry Device (PFED) Program of Record. - Evaluated by the USMC for tactical air platforms that do not have moving maps (i.e. AH-1 Cobra, AV-8 Harrier, F/A-18 Hornet).			
Title: Hellfire Height of Burst (HOB) Sensor (Army) ***Description:*** The HOB 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 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	2.000	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 2011 Accomplishments:*** Completed the following: - First HOB prototype demonstrations and tests at Redstone Arsenal (Rocket-on-a-Rope); - L3 and Lockheed Martin preliminary designs; - L3 HOB Sensor Component-Level preliminary design review (PBR); - Lockheed Martin System-Level PDR; - L3 HOB Sensor electrical detailed design; - L3 HOB Sensor software and firmware detailed designs; - Lockheed Martin ESAF electrical detailed design modifications to support HOB Sensor integration; - Lockheed Martin ESAF software and firmware detailed design modifications to support HOB Sensor integration; and - Lockheed Martin ESAF software and firmware code and initial testing.			
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. ***FY 2011 Accomplishments:*** Completed the following: detailed electrical design; detailed packaging design; fabrication and assembly of health monitor unit (HMU) CCAs; CCA board-level testing; Test Box design, fabrication, and assembly; detailed software design; software code and unit test; and graphical user interface (GUI) test software to support integration.	0.650	-	-
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	0.350	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
(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. ***FY 2011 Accomplishments:*** - Indicator Performance: Subcontractor completed improvements to both indicators/ Sensitivity of improved indicators equivalent to original. - Indicator Robustness: Subcontractor completed required improvements for both the 1-16 and 1-35B indicators. - Indicator Position Selected: Preliminary testing shows indication prior to agent breakthrough and very close to target.			
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 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-	1.900	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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. ***FY 2011 Accomplishments:*** - UL/UC2 Increment 1 with IIMS received fielding message in March 11. - UL/UC2 with IIMS selected for AF wide fielding to address critical deficiency in Installation Command and Control. - IIMS integration/transition to UL/UC2 Increment 2 on schedule for formal 4Q FY11 DT/OT testing.			
Title: Surfactant System for Surface 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 2011 Accomplishments:*** - Live agent tests were conducted to compare SuperSoap to Aircraft Cleaners qualified by MIL-PRF-87937D; SuperSoap decontaminates statistically better on Aircraft Topcoat and other materials. - Concept of Operations for SuperSoap (dilution ratio, optimized spraying conditions, etc.) were established. - Lab-scale sprayers were delivered to Edgewood Chemical and Biological Center and the Naval Surface Warfare Center – Dahlgren for chemical and biological efficacy testing.	0.355	-	-
Title: Accelerated Interlocking Mortar Increment Container Technology (Army)	0.638	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 . 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 2011 Accomplishments:*** - Generated drawings, specifications, and implemented engineering change proposal into current 120mm Mortar Propelling Charge Contract. - Charged establishment and uniformity; Esterline produced inert and live parts. - Initial sequential testing completed. - Hot leg of sequential safety retest (per test plan). - Ballistics testing completed. - Esterline facilitization contract modification completed. - Contract modification of improved packaging protector. Completed delivery of inert parts to Picatinny. Parts will be taken to the user and LAP facilities for familiarization with the new part. Delivery of live parts to Picatinny and American Ordnance for familiarization of new part completed.			
Title: Transition Initiatives ***FY 2011 Accomplishments:*** Addressed 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.	6.479	-	-
Accomplishments/Planned Programs Subtotals	16.872	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 2013 Office of Secretary Of Defense	DATE: February 2012
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*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	-	19.925	26.244	-	26.244	32.653	33.698	34.782	35.412	Continuing	Continuing
P455: *Operational Energy Capability Improvement*	-	19.925	26.244	-	26.244	32.653	33.698	34.782	35.412	Continuing	Continuing

A. Mission Description and Budget Item Justification

The basic mission of the Operational Energy Capability Improvement Fund (OECIF) is to fund innovation that will improve the Department's operational effectiveness via targeted science and technology investments that are intended to improve the energy performance of key elements of our forces. As Defense-Wide funding, it will incentivize long term change in the science and technology portfolio of the Department to be more in line with the Department-wide Operational Energy Strategy and foster generally needed innovations to improve operational energy performance. This mission has two keys aspects. First, to develop or demonstrate and rapidly transition into the force operational energy technologies or practices that will improve the Department's military capabilities and reduce its costs. Second, to establish within the military Services sustainable institutional capacities that will continue to research, develop and adopt operational energy innovations. OECIF funds serve as "seed money" to consolidate or initiate promising operational energy programs or directions to be sustained by the Services; accordingly, OECIF generally emphasizes supporting or establishing programs, rather than a series of one-off projects.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	-	26.841	-	26.841
Current President's Budget	-	19.925	26.244	-	26.244
Total Adjustments	-	19.925	-0.597	-	-0.597
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Operational Energy Capability Improvement	-	21.000	-0.597	-	-0.597
• DOD Efficiencies - Report, Studies Boards and Commissions	-	-1.046	-	-	-
• Economic Assumptions	-	-0.029	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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*	PROJECT P455: *Operational Energy Capability Improvement*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P455: *Operational Energy Capability Improvement*	-	19.925	26.244	-	26.244	32.653	33.698	34.782	35.412	Continuing	Continuing

A. Mission Description and Budget Item Justification

The basic mission of the Operational Energy Capability Improvement Fund (OECIF) is to fund innovation that will improve the Department's operational effectiveness via targeted science and technology investments that are intended to improve the energy performance of key elements of our forces. As Defense-Wide funding, it will incentivize long term change in the science and technology portfolio of the Department to be more in line with the Department-wide Operational Energy Strategy and foster generally needed innovations to improve operational energy performance. This mission has two keys aspects. First, to develop or demonstrate and rapidly transition into the force operational energy technologies or practices that will improve the Department's military capabilities and reduce its costs. Second, to establish within the military Services sustainable institutional capacities that will continue to research, develop and adopt operational energy innovations. OECIF funds serve as "seed money" to consolidate or initiate promising operational energy programs or directions to be sustained by the Services; accordingly, OECIF generally emphasizes supporting or establishing programs, rather than a series of one-off projects.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Operational Energy Capability Improvement	-	19.925	26.244
FY 2011 Accomplishments: Identified that the focus for FY 12 funding would be reducing the energy load of expeditionary outposts such as forward operating bases, combat outposts and patrol bases in combat, stability and humanitarian operations; this includes reducing the energy load of equipment carried by dismounted troops in forward areas. Issued a call for program proposals within the Department with technical focus areas including: more energy efficient heating and cooling, shelters, lighting and electronics. The call for program proposals encouraged involving non-traditional innovators and small businesses in the programs and leveraging and combining existing capabilities into something larger and more significant .			
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 Fund and execute via the Services or other organizations the programs selected to reduce the energy load of expeditionary outposts. Conduct an analysis to determine if FY 13 funds should also support another set of programs focused on different operational energy problems/technologies/capabilities than reducing the energy load at expeditionary outposts.			
FY 2013 Plans: FY13 efforts will continue to focus on the potential to increase combat capability and effectiveness while reducing operating costs. Continue to fund and execute via the Services or other organizations the efforts started in FY 12 that also require FY 13			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*	PROJECT P455: *Operational Energy Capability Improvement*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
funding. Begin new efforts to improve the operational energy performance of the total force as informed by the gap assessments conducted in FY 12.			
Accomplishments/Planned Programs Subtotals	-	19.925	26.244

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

None

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	-	4.140	53.946	-	53.946	60.804	64.073	64.052	65.068	Continuing	Continuing
P*004: *Countering Weapons of Mass Destruction Systems*	-	4.140	53.946	-	53.946	60.804	64.073	64.052	65.068	Continuing	Continuing

A. Mission Description and Budget Item Justification

The diverse and complex Countering Weapons of Mass Destruction (CWMD) – nuclear, biological and chemical threats – mission space requires an integrated approach towards capability development. Capability development must be based on a systems perspective that links strategic objectives with interrelated tasks and associated capabilities. The broad CWMD military strategic objectives and mission areas encompass many nontraditional capabilities for the Warfighter, and CWMD is not an 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 complementary capabilities through integration and synchronization. This program addresses developing an integrated and interconnected CWMD capabilities-based system that defines and enables a comprehensive, global awareness and readiness for CWMD steady-state and surge postures. A global CWMD situational awareness capability will be established and deployed worldwide via current communications systems and common operating pictures in support of this mission. This program will incorporate portfolio management tools and comprehensive analyses to enable a balanced and integrated CWMD systems portfolio, an optimized CWMD force structure, and the integration with and utilization of existing military assets to fill intelligence, sensor and reconnaissance gaps in CWMD.

This program also responds to the strategic needs outlined in the President's initiative, stated in his April 2009 speech in Prague; the US Combatant Commands integrated priorities and requirements; 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. This program is designed to leverage existing DoD resources and proven approaches to achieve its goals and rapidly deliver a capability to the Warfighter. It will ensure sufficient funding is available for travel to support the requirements of this program element.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	7.788	56.937	-	56.937
Current President's Budget	-	4.140	53.946	-	53.946
Total Adjustments	-	-3.648	-2.991	-	-2.991
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-3.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-0.119			
• Economic adjustments	-	-0.029	-2.991	-	-2.991

Change Summary Explanation

Congress reduced the FY12 budget $3.5M

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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*004: *Countering Weapons of Mass Destruction Systems*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P*004: *Countering Weapons of Mass Destruction Systems*	-	4.140	53.946	-	53.946	60.804	64.073	64.052	65.068	Continuing	Continuing

A. Mission Description and Budget Item Justification

The diverse and complex Countering Weapons of Mass Destruction (CWMD) – nuclear, biological and chemical threats – mission space requires an integrated approach towards capability development. Capability development must be based on a systems perspective that links strategic objectives with interrelated tasks and associated capabilities. The broad CWMD military strategic objectives and mission areas encompass many nontraditional capabilities for the Warfighter, and CWMD is not an 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 complementary capabilities through integration and synchronization. This program addresses developing an integrated and interconnected CWMD capabilities-based system that defines and enables a comprehensive, global awareness and readiness for CWMD steady-state and surge postures. A global CWMD situational awareness capability will be established and deployed worldwide via current communications systems and common operating pictures in support of this mission. This program will incorporate portfolio management tools and comprehensive analyses to enable a balanced and integrated CWMD systems portfolio, an optimized CWMD force structure, and the integration with and utilization of existing military assets to fill intelligence, sensor and reconnaissance gaps in CWMD.

This program also responds to the strategic needs outlined in the President's initiative, stated in his April 2009 speech in Prague; the US Combatant Commands integrated priorities and requirements; 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. This program is designed to leverage existing DoD resources and proven approaches to achieve its goals and rapidly deliver a capability to the Warfighter. It will ensure sufficient funding is available for travel to support the requirements of this program element.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Countering Weapons of Mass Destruction (CWMD) Systems	-	4.140	53.946
Description: CWMD Systems Development and Integration to include: • A global CWMD situational awareness system and concept of operation to enable a common operating picture and framework for CWMD that will integrate C4ISR, multi-modality intelligence, and other data to support simultaneous operations worldwide and address operational capability gaps. • A portfolio management capability based on an integrated system of systems architectural framework to evaluate potential CWMD investments. • Enhancements to major defense acquisition programs to address CWMD mission and systems' gaps. • A CWMD organizational capabilities review and update as required.			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*004: *Countering Weapons of Mass Destruction Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
• Initiate development of a CWMD common operating picture (COP), now known as Global CWMD Situational Awareness System (GCAS), 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 (DoD organizational capabilities) to provide more rapid, robust responses, develop CMWD concept of operations. • Develop specific end-user information requirements and the initial Concept of Operations (CONOPS) for the use and integration of GCAS capabilities into day to day operations of Analysts and Decision Makers. Include a supporting non-material solution analysis to include organizational and structural infrastructure for the GCAS system. • Review and evaluate the components of operational systems and organizations that contribute towards all mission areas in CWMD. • Develop an initial systems architecture for GCAS integration approach. Derive the systems level requirements from the user requirements and system architecture. • Begin technical and operational assessments of the tools for data integration and information processing, including data management and visualization alternatives. Analysis will include demonstrated commercial and government available and applicable towards the system requirements for GCAS. • Initiate development of GCAS methodology using WMD intelligence and other prevention/control data to support global/regional awareness and the command and control of forces for CWMD. • Demonstrate a proof of concept of the semantic fusion component of a GCAS capability for technical risk reduction using the existing Haystack system developed by USD(I) to fuse data from various CWMD and Counter-terrorism data sources and look for new indicators and warnings not previously discovered or demonstrate correlations faster and easier than existing capabilities. • Identify framework and options for portfolio management of CWMD systems and begin the development of a risk-based framework to prioritize and guide investment decisions that result in improved operational capabilities. Develop qualitative metrics of performance to drive prioritization and identify options for integrated management of capability development. • Begin a structured assessment of DoD organizational capabilities to accomplish the integrated global CWMD mission set in order to support near-term activities and provide a framework for addressing longer-term capability, force-sizing, and force employment issues. In FY12, the assessment focused on the CWMD mission areas of WMD Interdiction, WMD Elimination, and Consequence Management.			
FY 2013 Plans: The FY13 program will work towards developing a capability that will address all WMD threats – nuclear, chemical, and biological – from both state and non-state sources. It will involve information on a range of drivers of proliferation, including key actors, networks, sensitive materials, and extensive contextual information. It will assist DoD in both preventing the loss of sensitive materials and technologies (and the deliberate or natural spread of disease), and in responding to attacks and outbreaks when			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*004: *Countering Weapons of Mass Destruction Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
they do occur. It will integrate with information systems that the combatant commands and Services already use in their day-to-day operations. GCAS OPERATIONAL SUPPORT • Complete the GCAS Concept of Operations (CONOPS). • Complete the analysis of organizational and structural infrastructure options and requirements for GCAS. Focus on the personnel requirements for the centralized component of GCAS i.e. the home base for operations or analysis center. Select location for deployment of the Initial Operating Capability. • Continue the structured assessment of DoD organizational capabilities to accomplish the integrated global CWMD mission set. FY13 efforts will include Security Cooperation and Partner Activities, Threat Reduction Cooperation, and Passive Defense. GCAS PROGRAM, SYSTEMS ENGINEERING and SYSTEMS INTEGRATION • Begin information model and information architecture development. Complete system functional and performance requirements, and specifications. • Complete technical and operational assessments for data integration and information processing, including data management and visualization alternatives. Analysis will include demonstrated commercial and government available and applicable towards the system requirements for GCAS. • Conduct limited evaluation and downselection of integration and information processing tools based on the candidates evaluated in FY12. Complete technology readiness evaluations as required. • Continue and expand the methodology for determining what Situational Awareness information should be generated to fulfill information needs to describe steady state and event tracking/crisis monitoring. Determine the need for additional data streams to support and their availability. • Transition GCAS demonstration capability to an operational prototype in FY13 with the intention for fielding an initial operating capability in FY14. • Develop GCAS prototype. Identify, leverage and integrate appropriate existing technologies, data and fusion methodologies to produce a GCAS capability with minimal new development efforts. Extend the Haystack data fusion demonstration system to include broader set of data streams and incorporate complementary and orthogonal analytic tools to facilitate the generation of the CWMD situational awareness actionable data. • Develop and implement interfaces to acquire biosurveillance and chemical data from national, international programs and sources. • Develop and implement interfaces to acquire nuclear threat data from nuclear security, nuclear treaty verification, nuclear monitoring, and radiation detection sources and programs.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*004: *Countering Weapons of Mass Destruction Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
• Initiate exercise program to demonstrate integration and overlaying of CWMD, counterterrorism, maritime and air domain awareness, and counternarcotics for improved situational awareness. This will include the ingestion and fusion of military maritime and worldwide shipping data. • Work closely with and implement the information sharing mechanisms as required including policy, certifications, tags and controls. CWMD PORTFOLIO MANAGEMENT • Begin development of a CWMD systems architecture to enable comprehensive and systematic evaluation of needed capabilities as well as their relationship to each other. • Refine qualitative metrics and assessment criteria and begin development of quantitative metrics for evaluation, where applicable. • Begin development of simulation and modeling capability to evaluate and compare proposed investment options. MAJOR DEFENSE ACQUISITION PROGRAM ENHANCEMENTS • Identify those existing and planned major defense programs that can contribute to the CWMD mission by improving status, tracking, interdiction and recovery as necessary. Begin efforts to integrate supporting data streams from major defense systems (air, land, and sea) to support the persistent surveillance of WMD threats. FY14 and beyond: • Achieve Initial Operating Capability (IOC) • Begin next spiral of situational awareness capability - Add new data sources, life patterns, and rule-sets/algorithms. Generate new methodology and supporting situational awareness feeds from new data and algorithms. • Continue to build/upgrade/modify the required infrastructure for the GCAS operations home base to include hardware and software for computational and processing capabilities, training, and organizational support to support IOC and attain full operational capability (FOC). • Integrate GCAS components into a service-oriented, web-based collaborative environment; register and publish all service and data capabilities; enable authorized users to subscribe to information of interest; allow accredited data sources to be added. Where appropriate, allow integrated GCAS services and its associated updated CONOPS available to all Combatant Commands (COCOMs) and military users. • Scale GCAS hardware to support additional users; integrate and test analytical engine updates; perform analyst evaluation of updates.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*004: *Countering Weapons of Mass Destruction Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
• Achieve network and system certifications and accreditations and identify initial capability for classified and unclassified security domains; identify additional Command and Control (C2) integration updates required; provide integrated technical user support and operational reach-back support. • Achieve full certification and accreditations on all security domains; provide operational GCAS capabilities on classified and unclassified networks; conduct Technology Refresh; Knowledge Refresh; provide additional of Data Sources; integrate with additional C2 systems. • Continue technology and data stream gap analysis and supporting research and development to fulfill the requirements for achieving CWMD situational awareness.			
Accomplishments/Planned Programs Subtotals	-	4.140	53.946

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 ASD/NCB. Maintain cost, schedule, and performance reporting, review, and adjudication. Maintain requirements traceability matrix.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	31.263	29.924	33.234	-	33.234	32.629	33.479	34.133	34.876	Continuing	Continuing
P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	31.263	29.924	33.234	-	33.234	32.629	33.479	34.133	34.876	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) addresses the need to defend and deter against weapons of mass destruction (WMD) threats and to safeguard personnel; prevent unauthorized access to equipment, installations, material, and documents; and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development throughout DoD for an integrated and systemic RDT&E approach for countering nuclear threats and nuclear and conventional physical security equipment (PSE) technology and systems. The funding has been centralized in this Defense-wide PE since the early 1990s and represents a substantial portion of all DoD PSE RDT&E funding. Priorities for this PE RDT&E efforts are driven by inputs from Quadrennial Defense Review guidance, Combatant Command and Service requirements, analysis reports such as “Protecting the Force: Lessons from Fort Hood, January 2010, the Integrated Unit, Base, and Installation Protection Cost Benefits Analysis, Multi-national Work Plans established through the Nuclear Security Summit process, and DoD Directive 5210.41, Security Policy for Protecting Nuclear Weapons-directed requirements and associated security deviation reports.

Under this integrated approach, funds are used to provide PSE advanced component development and prototypes for the Department in seven capability areas: (1) Detection and Assessment; (2) Access Controls; (3) Installation and Transport Security; (4) Storage and Safeguards; (5) Prevention; (6) Decision Support Systems; and (7) Analytical Support. 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 Commercial/Government off-the-shelf product. The PE initiatives are coordinated by the Security Policy Verification Committee and the Physical Security Equipment Action Group. These groups work together to avoid duplication of effort and when applicable ensure systems integration and promote interoperability and sustainability.

This PE can fund travel to support the requirements of this program.

This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	32.132	36.798	36.416	-	36.416
Current President's Budget	31.263	29.924	33.234	-	33.234
Total Adjustments	-0.869	-6.874	-3.182	-	-3.182
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-6.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-0.668			
• Economic adjustments	-0.869	-0.206	-3.182	-	-3.182

Change Summary Explanation

Congress reduced the FY12 budget by $6M.

Economic adjustments – 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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P162: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	31.263	29.924	33.234	-	33.234	32.629	33.479	34.133	34.876	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This Program Element (PE) addresses the need to defend and deter against weapons of mass destruction (WMD) threats and to safeguard personnel; prevent unauthorized access to equipment, installations, material, and documents; and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development throughout DoD for an integrated and systemic RDT&E approach for countering nuclear threats and nuclear and conventional physical security equipment (PSE) technology and systems. The funding has been centralized in this Defense-wide PE since the early 1990s and represents a substantial portion of all DoD PSE RDT&E funding. Priorities for this PE RDT&E efforts are driven by inputs from Quadrennial Defense Review guidance, Combatant Command and Service requirements, analysis reports such as “Protecting the Force: Lessons from Fort Hood, January 2010, the Integrated Unit, Base, and Installation Protection Cost Benefits Analysis, Multi-national Work Plans established through the Nuclear Security Summit process, and DoD Directive 5210.41, Security Policy for Protecting Nuclear Weapons-directed requirements and associated security deviation reports.

Under this integrated approach, funds are used to provide PSE advanced component development and prototypes for the Department in seven capability areas: (1) Detection and Assessment; (2) Access Controls; (3) Installation and Transport Security; (4) Storage and Safeguards; (5) Prevention; (6) Decision Support Systems; and (7) Analytical Support. 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 Commercial/Government off-the-shelf product. The PE initiatives are coordinated by the Security Policy Verification Committee and the Physical Security Equipment Action Group. These groups work together to avoid duplication of effort and when applicable ensure systems integration and promote interoperability and sustainability.

This PE can fund travel to support the requirements of this program.

This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Detection and Assessment	5.363	5.898	5.756

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

Description: The ability to detect an adversary and assess their intentions is a basic physical security tenant. This capability area will design equipment to identify and warn of unauthorized access to a specified area or installation as well as equipment related to the notification and identification of explosive threats or hazards.

FY 2011 Accomplishments:
- Installed full suite of Diebold Predator Elite with Correlation of Radars for Identify Friend or Foe project.
- Tested seismic sensors configured in arrays for detecting, identifying, and tracking targets of interest on land, sea and air.
- Used comparative infrared and Raman tests to determine which explosive detection systems performed the best.
- Investigated signals generated by target and confusant materials in order to develop protocols to reduce false alarms in explosive detection equipment.
- Completed Shoreline Monitoring System Demonstration at Redstone Arsenal.

FY 2012 Plans:
- Successfully display and identify friend or foe information.
- Advance seismic sensors configured in arrays for detecting, identifying, and tracking targets of interest on land, sea and air.
- Detect human activity in heavy foliage using polarimetric imaging technology.
- Improve the performance of sonar technology by lowering its false alert rate on nuisance targets, increasing its probability of detection for manlike intruders and increasing its detection and classification capability against unmanned underwater vehicles.
- Reduce nuisance and false alarm rates and improve automatic human swimmer / diver discrimination.
- Long-range imaging sensor to operate with a sonar system to identify divers at significant ranges in the underwater environment.
- Design optimal active sonar functionality in ultra-shallow water environments.
- Develop stand-alone marine mammal pen system and associated concept of operations.
- Image, classify and warn underwater diver contacts with minimal human intervention.
- Provide a shoreline, perimeter, enclave detection barrier.
- Develop early warning and persistent surveillance/assessment utilizing video motion sensing, audio tracking and seismic detection capabilities.
- Increase surveillance and assessment of activity at all hours and in locations that can be on the edge or outside of the facility perimeter.
- Interrupt adversaries by analyzing activity in advance of a breach of a defined restricted area boundary.
- Provide All-weather surveillance sensor and the ability to classify and identify targets.

FY 2013 Plans:
- Identify friend or foe information proof of concept.
- Advance seismic sensors configured in arrays for detecting, identifying, and tracking targets of interest on land, sea and air.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Detect human activity in heavy foliage using polarimetric imaging technology. • Improve the performance of sonar technology by lowering its false alert rate on nuisance targets, increasing its probability of detection for manlike intruders and increasing its detection and classification capability against unmanned underwater vehicles. • Reduce nuisance and false alarm rates and improve automatic human swimmer / diver discrimination. • Long-range imaging sensor to operate with a sonar system to identify divers at significant ranges in the underwater environment. • Design optimal active sonar functionality in ultra-shallow water environments. • Develop stand-alone marine mammal pen system and associated concept of operations. • Image, classify and warn underwater diver contacts with minimal human intervention. • Provide a shoreline, perimeter, enclave detection barrier. • Develop early warning and persistent surveillance/assessment utilizing video motion sensing, audio tracking and seismic detection capabilities. • Increase surveillance and assessment of activity at all hours and in locations that can be on the edge or outside of the facility perimeter. • Interrupt adversaries by analyzing activity in advance of a breach of a defined restricted area boundary. • Provide All-weather surveillance sensor and the ability to classify and identify targets.			
Title: Access Controls	5.620	4.218	3.015
Description: Controlling access to safeguard personnel and their families and to prevent unauthorized access to critical infrastructure and materials is paramount. This capability area will focus on programs and processes related to the validity and verification of individuals entering or already within a facility. ***FY 2011 Accomplishments:*** • Completed Defense Installation Access Control Demonstration II. • Conducted independent review of Continuous Vetting for Defense Installation Access Control project. • Completed Biometrics Feasibility Study. • Developed plan for Enterprises Services Architecture for Defense Installation Access Control project. • Completed the Behavioral Analysis Study that addressed the DoD's Independent Review 's report, Protecting the Force: Lessons Learned from Ft Hood ***FY 2012 Plans:*** • Use passive and active insider threat scenarios to determine how technology and procedures can be integrated to minimize an insider threat to intentionally exceed or misuse an authorized level of access to nuclear materials or weapons. • Develop interruption methods to provide immediate, semi-lethal effect on the interior of structures containing nuclear resources without any additional specialized equipment. • Conduct Behavioral Analysis table top exercise.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Continue Defense Installation Access Control spiral demonstrations in operational environments. ***FY 2013 Plans:*** • Advance technology and procedures to minimize an insider threat to intentionally exceed or misuse an authorized level of access to nuclear materials or weapons. • Develop interruption methods to provide immediate, semi-lethal effect on the interior of structures containing nuclear resources without any additional specialized equipment. • Transition Defense Installation Access Control to system development and demonstration activities.			
Title: Installation and Transport Security ***Description:*** Robust installation and transport security are vital to preventing a weapon of mass destruction attack or the unauthorized access to key assets such as nuclear weapons and special nuclear material. This capability area will focus on programs and equipment intended to improve the physical security profile of fixed sites and facilities, as well as critical items while in-transit. ***FY 2011 Accomplishments:*** • Identified detection options and a range of flexible response capabilities, to include the full spectrum of non-lethal to lethal tactical weapon systems, to protect personnel and assets against the terrorist threat in a waterside security environment. • Evaluated persistent surveillance, intrusion detection, explosive detection, entry denial, acoustic hailing, autonomous unmanned systems, chemical, biological, radiological, nuclear, and high-explosive and associated functions. ***FY 2012 Plans:*** • Evaluate detection options and response capabilities, to include the full spectrum of non-lethal to lethal tactical weapon systems, to protect personnel and assets against the terrorist threat in a waterside security environment. • Develop persistent surveillance, intrusion detection, explosive detection, entry denial, acoustic hailing, autonomous unmanned systems, chemical, biological, radiological, nuclear, and high-explosive and associated functions. ***FY 2013 Plans:*** • Determine if the radar technology can be successfully modified for operation in a cluttered environment while providing extended area protection against direct trajectory stand-off threats. • Assess the ability of electronic warfare sensor to perform off-axis defeats against standoff direct-fired threats. • Establish a semi-permanent installation or relocatable short-term and rapidly installed perimeter security system. • Proof of concept for detection options and response capabilities previously identified, to include the full spectrum of non-lethal to lethal tactical weapon systems, to protect personnel and assets against the terrorist threat in a waterside security environment. • Proof of concept for persistent surveillance, intrusion detection, explosive detection, entry denial, acoustic hailing, autonomous unmanned systems, chemical, biological, radiological, nuclear, and high-explosive and associated functions.	5.938	5.898	5.995

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Design a software baseline that brings all of the Tactical Automated Security System software versions back under Government configuration management and control. • Develop a low frequency, single crystal-based, non-lethal to lethal scalable transducer capable of emitting acoustic energy signal.			
Title: Storage and Safeguards ***Description:*** Properly securing critical assets to prevent access by unauthorized persons and implementing control measures that ensure access is limited to authorized persons is the foundation of physical security. This capability area will focus on equipment (e.g., locks, doors, etc.) designed to delay or stop unauthorized entry / access to a specified / localized area. ***FY 2011 Accomplishments:*** • Standardized an economical magazine construction that comprehensively satisfies physical security criteria, explosive safety, operational and seismic safety standards. • Developed a Government Services Administration-approved shipboard security solution. ***FY 2012 Plans:*** • Identify material accounting, inventory, and tracking methods using modern technologies to strengthen nuclear material safeguards and controls. • Develop options for intercontinental ballistic missile launcher closure door/lock mechanism upgrades to improve delay features. • Evaluate the intercontinental ballistic missile security system to include access delay features, intrusion detection systems, and response forces. • Explore interior denial options for the intercontinental ballistic missile launch facility and develop recommendations based on weapon system impact, cost and overall security performance. ***FY 2013 Plans:*** • Advance material accounting, inventory, and tracking methods using modern technologies to strengthen nuclear material safeguards and controls. • Evaluate options for intercontinental ballistic missile launcher closure door/lock mechanism upgrades to improve delay features. • Identify solutions for gaps in intercontinental ballistic missile security system to include access delay features, intrusion detection systems, and response forces. • Test interior denial options for the intercontinental ballistic missile launch facility and develop recommendations based on weapon system impact, cost and overall security performance.	2.170	1.788	2.314
Title: Prevention	3.760	5.769	8.094

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

Description: The security procedures taken to discourage an adversary from accessing weapons of mass destruction or gaining unauthorized access to critical assets are at the heart of prevention. This capability area will focus on broad spectrum, generic efforts which have the ability to influence multiple areas.

FY 2011 Accomplishments:
• Successfully executed the Force Protection Equipment Demonstration VIII.
• Forecasted technology trends which may strengthen and enhance the countering nuclear threat mission area.
• Identified gaps in the US government-wide countering nuclear threats R&D programs.

FY 2012 Plans:
• Understand air assault threats and use modeling & simulation to conduct effectiveness analyses to identify the weapon system combinations that offer the most cost-effective approach to counter those threats.
• Identify military, commercial and homemade explosives by integrating two identification technologies into one handheld rugged system.
• Provide federal physical security decision-makers the opportunity to observe and become familiar with commercial-off-the-shelf force protection equipment available for procurement.
• Qualify for procurement an array of commercial off-the-shelf intrusion detection and assessment equipment that addresses capability gaps.
• Create a non-ionizing personnel scanner that can detect threats on the body in a high throughput environment.
• Integrate security system components via wireless communications with high security over long ranges, without repeaters.
• Plan for the Force Protection Equipment Demonstration IX at Stafford Regional Airport.

FY 2013 Plans:
• Support bi-lateral engagements for the successful DoD participation in Exercise Opal Tiger.
• Establish a Global Initiative to Combat Nuclear Terrorism Strategic Engagement Plan to ensure an effective and efficient DoD participation in radiation detection and forensics activities.
• Develop Inventory Management curriculum in conjunction with National Nuclear Security Administration
• Improve test and standard reference materials for National Technical Nuclear Forensics simulation and exercise support.
• Support Physical Security Modeling and simulation support for curriculum development and support in conjunction with Global Nuclear Lockdown efforts at Internationals Centers of Excellence.
• Understand air assault threats and use modeling & simulation to conduct effectiveness analyses to identify the weapon system combinations that offer the most cost-effective approach to counter those threats.
• Identify military, commercial and homemade explosives by integrating two identification technologies into one handheld rugged system.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Provide federal physical security decision-makers the opportunity to observe and become familiar with commercial-off-the-shelf force protection equipment available for procurement. • Qualify for procurement an array of commercial off-the-shelf intrusion detection and assessment equipment that addresses capability gaps. • Create a non-ionizing personnel scanner that can detect threats on the body in a high throughput environment. • Integrate security system components via wireless communications with high security over long ranges, without repeaters. • Execute Force Protection Equipment Demonstration IX at Stafford Regional Airport.			
Title: Decision Support Systems	5.997	4.895	5.414
Description: Decision support systems serve the management, operations, and planning levels of the DoD physical security enterprise to help to make decisions, which may be rapidly changing and not easily specified in advance. This capability area will focus on command and control equipment and projects related to the creation and enhancement of common operating pictures, and the establishment of common architectures / interface standards. ***FY 2011 Accomplishments:*** • Provided DoD and industry the means to achieve Physical Security Equipment interoperability through standards and interface specifications. • Designed the framework for the collection and consolidation of data from disparate small to large security systems. ***FY 2012 Plans:*** • Integrate sensors, sensor systems and unmanned systems with automated fusion capabilities to populate available Common Operating Pictures (COP) with in-depth security, surveillance, and response data for fixed and semi-fixed/expeditionary elements. • Provide DoD and industry the means to achieve Physical Security Equipment interoperability through standards and interface specifications. • Design the framework for the collection and consolidation of data from disparate small to large security systems. • Integrate marine mammal vigilant localization enhancement into existing systems. ***FY 2013 Plans:*** • Advance Integration of sensors, sensor systems and unmanned systems with automated fusion capabilities to populate available Common Operating Pictures (COP) with in-depth security, surveillance, and response data for fixed and semi-fixed/expeditionary elements. • Provide DoD and industry the means to achieve Physical Security Equipment interoperability through standards and interface specifications. • Design the framework for the collection and consolidation of data from disparate small to large security systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Train and demonstrate the ability for marine mammal to perform a 24/7 autonomous swimmer/diver detection and localization mission.			
Title: Analytical Support ***Description:*** This capability area will focus on studies related to physical security topics and operational and management efforts related to day-to-day activities of the DoD Physical Security Equipment/Countering Nuclear Threats RDT&E Program. ***FY 2011 Accomplishments:*** • Stood up physical security equipment test and evaluation capability with the Marine Corps set to lead this effort • Conducted live-fire and modeling tests of selected weapons, perform analysis, and develop policy requirements based on findings. • Qualified, for procurement, an array of COTS intrusion detection and assessment equipment that meets identified Integrated Base Defense Security Systems capability and sustainment gaps. ***FY 2012 Plans:*** • Conduct test and evaluation efforts for physical security equipment • Conduct live-fire and modeling tests of selected weapons, perform analysis, and develop policy requirements based on findings. • Qualify, for procurement, an array of COTS intrusion detection and assessment equipment that meets identified Integrated Base Defense Security Systems capability and sustainment gaps. ***FY 2013 Plans:*** • Conduct test and evaluation efforts for physical security equipment • Conduct live-fire and modeling tests of selected weapons, perform analysis, and develop policy requirements based on findings. • Qualify, for procurement, an array of COTS intrusion detection and assessment equipment that meets identified Integrated Base Defense Security Systems capability and sustainment gaps.	2.415	1.458	2.646
Accomplishments/Planned Programs Subtotals	31.263	29.924	33.234

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Base Defense	Sub Allot	PM-FPS:Ft Belvoir, VA	2.130	3.720	Mar 2012	4.800		-		4.800	0.000	10.650	10.650
Defense Installation Access Control	Various	Various performers:Various locations	5.150	2.000	Mar 2012	1.500		-		1.500	0.000	8.650	8.650
Countering Nuclear & Biological Threats	Various	Various performers:Various locations	0.500	0.900	Mar 2012	1.910		-		1.910	0.000	3.310	3.310
Force Protection Equipment Demonstration	Sub Allot	PM-FPS:Fort Belvoir, VA	1.237	0.600	Mar 2012	0.500		-		0.500	0.000	2.337	2.337
Integrated Waterside Security	MIPR	Various performers:Various locations	-	0.700	Mar 2012	0.500		-		0.500	0.000	1.200	1.200
Shipboard Security Containers	MIPR	SPAWAR Atlantic:Charleston, SC	-	0.480	Mar 2012	0.190		-		0.190	0.000	0.670	0.670
Ordnance Storage and Handling Facilities	MIPR	NAVFAC ESC:Pt. Hueneme	-	0.400	Mar 2012	0.900		-		0.900	0.000	1.300	1.300
Shoreline Monitoring System	MIPR	NAVFAC ESC:Pt. Hueneme	1.706	0.750	Mar 2012	0.500		-		0.500	0.000	2.956	2.956
Project JIGSAW	MIPR	SPAWAR Atlantic:Charleston, SC	1.250	0.250	Mar 2012	1.000		-		1.000	0.000	2.500	2.500
Video Management System	Sub Allot	Force Protection Branch ESC/ HSS:Hanscom AFB, MA	-	0.649	Mar 2012	0.750		-		0.750	0.000	1.399	1.399
Interior Video Motion Detection	Sub Allot	Force Protection Branch ESC/ HSS:Hansocm AFB, MA	-	0.455	Mar 2012	0.550		-		0.550	0.000	1.005	1.005
Wide Area Detection	Sub Allot	Force Protection Branch ESC/ HSS:Hanscom AFB,MA	-	0.850	Mar 2012	1.000		-		1.000	0.000	1.850	1.850

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Insider Threat	IA	Applied Research Labs: University of Texas:Austin, TX	0.701	0.100	Mar 2012	-		-		-	0.000	0.801	0.801
Project holder	Various	Various performers:Various locations	15.000	13.840	Mar 2012	15.544		-		15.544	0.000	44.384	44.384
		Subtotal	27.674	25.694		29.644		-		29.644	0.000	83.012	83.012

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Security Equipment Integration Working Group	MIPR	SPAWAR Atlantic:Charleston, SC	1.602	1.000	Mar 2012	1.000		-		1.000	0.000	3.602	3.602
NM Support Contract	PO	Washington Headquarters Services:Washington DC	1.020	1.060	Mar 2012	1.090		-		1.090	0.000	3.170	3.170
		Subtotal	2.622	2.060		2.090		-		2.090	0.000	6.772	6.772

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PSE Test and Evaluation	MIPR	Various performers:Various locations	-	0.270	Mar 2012	1.000		-		1.000	0.000	1.270	1.270
Sensor Fusion: IR and Raman	MIPR	NAVEOD Tech Div:Indian Head, MD	0.800	0.800	Mar 2012	0.500		-		0.500	0.000	2.100	2.100
Enhance IMS Systems	MIPR	NAVEOD Tech Div:Indian Head, MD	0.600	1.100	Mar 2012	-		-		-	0.000	1.700	1.700
		Subtotal	1.400	2.170		1.500		-		1.500	0.000	5.070	5.070

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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*	

	Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	31.696	29.924		33.234		-		33.234	0.000	94.854	94.854

Remarks

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	20.960	20.437	21.023	-	21.023	21.276	21.536	21.779	22.018	Continuing	Continuing
P527: *Retract Larch*	20.960	20.437	21.023	-	21.023	21.276	21.536	21.779	22.018	Continuing	Continuing
Quantity of RDT&E Articles											

Note

Reduction due to efficiency action.

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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	21.592	20.437	21.999	-	21.999
Current President's Budget	20.960	20.437	21.023	-	21.023
Total Adjustments	-0.632	-	-0.976	-	-0.976
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.632	-			
• Adjustments	-	-	-0.976	-	-0.976

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Retarct Larch	20.960	20.437	21.023
Description: Not applicable. Information Classified			
FY 2011 Accomplishments: Not applicable. Information Classified			
FY 2012 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
Not applicable. Information Classified ***FY 2013 Plans:*** Not applicable. Information Classified			
Accomplishments/Planned Programs Subtotals	20.960	20.437	21.023

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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	-	108.698	94.624	-	94.624	91.041	91.848	93.558	95.448	Continuing	Continuing
600: *WALKOFF*	-	108.698	94.624	-	94.624	91.041	91.848	93.558	95.448	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Classified.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	112.142	104.959	-	104.959
Current President's Budget	-	108.698	94.624	-	94.624
Total Adjustments	-	-3.444	-10.335	-	-10.335
• Congressional General Reductions	-	-0.749			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-2.695			
• Department adjustment	-	-	-10.335	-	-10.335

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: WALKOFF	-	108.698	94.624
FY 2011 Accomplishments: Not Applicable			
FY 2012 Plans: Classified, Special Access Program.			
FY 2013 Plans: Classifed, Special Access Program.			
Accomplishments/Planned Programs Subtotals	-	108.698	94.624

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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, Special Access Program.

F. Performance Metrics

Classified, Special Access Program.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	9.673	10.954	-	-	-	-	-	-	-	Continuing	Continuing
P709: *Joint Robotics Program*	9.673	10.954	-	-	-	-	-	-	-	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.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	9.878	11.129	11.218	-	11.218
Current President's Budget	9.673	10.954	-	-	-
Total Adjustments	-0.205	-0.175	-11.218	-	-11.218
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.116	-			
• Economic Assumptions	-0.050	-	-	-	-
• FFRDC	-0.036	-	-	-	-
• Other Adjustments	-0.003	-0.175	-11.218	-	-11.218

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2011	FY 2012
Project: P709: *Joint Robotics Program*		
Congressional Add: *Autonomous Machine Vision for Mapping and Investigation of Remote Sites*	-	-
Congressional Add: *Joint Robotics Training Program*	-	-
Congressional Add Subtotals for Project: P709	-	-
Congressional Add Totals for all Projects	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P709: *Joint Robotics Program*	9.673	10.954	-	-	-	-	-	-	-	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 2011	FY 2012	FY 2013
Title: Command, Communication & Control	0.829	1.609	-

Description: Development of data delivery, control and display, or task execution technologies which will enhance unmanned ground vehicle operations, reduce operator loads and improve effectiveness. Development and integration of communication, mission planning, human-robot interface technologies, and advanced intelligence capabilities to support robotic operations.

FY 2011 Accomplishments:

1) Human Robot Interface (HRI) for Explosive Ordnance Disposal (EOD) Unmanned Ground Vehicles (UGVs) - The purpose of this project is to develop an intuitive user interface (UI) for the family of UGV systems to be fielded under the Advanced EOD Robotic Systems (AEODRS) program. This project will focus specifically on the usability and human robot interface (HRI) design issues. The end result will be a UI that provides a common look and feel across the family of UGVs, fully supports the operator in accomplishing the most common EOD mission tasks and functions, and in general makes the EOD operator’s job easier rather than more difficult. Although this effort is focused on the EOD mission, many of the resulting lessons, UI design techniques, and the underlying software will be applicable to a wide range of UGV systems and missions.

- Identified and documented Human-Robot Interface software requirements

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Define user interface screens and controls - Update Multi-robot Operator Control Unit (MOCU) - Usability test for HRI system - Final Delivery of MOCU 2) High Speed Small Tele-operation Command & Control - The purpose of this project is to develop and demonstrate an advanced system to employ UGV-based stability technologies, low latency operator control and feedback, and necessary autonomy to support high speed assisted-tele-operation for small UGVs. High speed tele-operation 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. - Capstone Demonstration of the system 3) Automated Mobile Communication Relay - This project will develop an automated communications relay on a man-portable robot. The lead robot will be outfitted with sensors that detect pertinent elements in the environment, and communicate them to the communications robot, all transparent to the EOD technician. The initial effort will focus on a robust single relay and then explore extending the approach to include additional relays, perhaps on smaller platforms. This project is expected to start in FY2012. 4) Non-Radio Frequency Communication for Small UGVs – This project will research, develop, and evaluate alternative methods to RF communications small UGV. - Completed Interrogator Fabrication - Completed Interrogator field tests - Completed Interrogator Demonstrations - Completed Modulating Retro-Reflector Fabrication - Finalized Pod Relay Fabrication - Finalized Pod Relay Mount Fabrication - Held System Demonstration and Delivery			
FY 2012 Plans: 1) Automated Mobile Communication Relay - Integrate sensors and processing payload onto man-portable robots (both EOD and communications robots) - Develop software components required to conduct automated relay mission - Conduct experimental assessment system concept utilizing COTS components and radios to validate concept feasibility - Terrain and road estimation module development - Prediction moduel development - Prototype hardware development and construction - Perform prototype hardare validations and test			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Technology demontstration 1 - Critical Design 2 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 ***FY 2013 Plans:*** 1) Automated Mobile Communication Relay - Further develop system components, and conduct experimental assessment in a relevant environment 2) Other projects for this area will be determined by 4QFY12			
Title: Interoperability ***Description:*** Promote and guide technology development to meet joint requirements and promote ground as well as air unmanned systems interoperability. Support the bridging of currently incompatible robots and controllers from various manufacturers, using different communications channels and hardware. Optimize best features of prior/ongoing research efforts into a maturing, standardized system that can be easily ported to robotic platforms used throughout the DoD. ***FY 2011 Accomplishments:*** 1) Interoperability Challenges - Development of a set of interoperability profile documents based on SAE AS 4.0 messages, open standards and interfaces for platforms, payloads, control, and communications data links along with video/audio standards. The immediate need for more complex systems such as unmanned Applique Kit(s) that can turn systems designed to function with soldiers at specific control stations into unmanned systems, and the desire for more autonomy in general will require IOP documents to be more complex with more variable solutions. - Conducted Architecture Trade Studies - Developed and staffed Interoperability Profiles guidance document - Create Robotic System Integration Lab and Virtual System Integration Lab Validation Plan - Analyzed Robotic Operating System and Joint Architecture for Unmanned Systems - Conducted meeting with NATO Industrial Advisory Group Study Group - Publish Interoperability Profile	-	1.134	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Conducted Robotic System Integration Lab and Virtual System Integration Lab Validation - Delivered Robotic System Integration Lab and Virtual System Integration Lab Validation Report ***FY 2012 Plans:*** 1) Interoperability Challenges - Extend IOP V0 to autonomous systems, specifically those with Applique Kits ***FY 2013 Plans:*** 1) Interoperability Challenges - Develop testing capability/environment associated with the IOPs for autonomous systems - Verify test environment/procedures, an Applique Kit prototype solution will be provided and tested			
Title: Manipulation ***Description:*** Incorporation of new or existing technologies to enable a 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. ***FY 2011 Accomplishments:*** 1) Conformal End Effectors - The purpose of this project is to develop a conformal end effector with adjustable compliance that is targeted for use on a mobile manipulator on a small UGV. 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. The project directly supports the requirement for a conformal three-jaw gripper contained in the Capability Development Document (CDD) for Advanced Explosive Ordnance Disposal Robotic System (AEODRS). - Assembly and bench testing - System testing - Mod of end effector interface - Integration with manipulator - Review and final reports - Assembly and Bench testing of the conformal end effector. - System testing ***FY 2012 Plans:*** 1) Projects for this area will be determined in 1QFY12 ***FY 2013 Plans:***	0.153	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
1) Projects for this area will be determined by 4QFY12			
Title: Mission/Platform Specific	1.623	5.678	-
Description: Development of a technology to address the requirements of a particular mission or to be integrated with a specific platform. ***FY 2011 Accomplishments:*** 1) Robotic Range Clearance Competition - Conduct research and experiments to develop, design, and support a robotic vegetation clearance competition. Purchase necessary equipment to support experimental activities for the vegetation clearance competition design. - Completed Environmental Assessment - Finalized Rules and Metrics for the Competition - Held In Progress Reviews with competitor teams - Final Competition held in Guernsey, Wyoming - Complete report on the competition and filed with Congress 2) Counter Tunnel Exploitation/Mapping - The scope of this effort is to develop and demonstrate robotic system technologies that will enable insertion of a robotic system through a small bore hole into a suspect tunnel cavity for the purpose of conducting precision mapping and characterization operations in the austere tunnel environments (hand-dug border tunnels, caves, etc.). - Finalized and delivered snakebot platform - Started development with sensor suite for the platform - Continued development of the Bore Hole Support Apparatus 3) Maritime Interdiction Operations - This project aims to develop a throwable robot (throwbot) that can be tossed on to the deck of a ship (from a boat alongside), or down a hatch (from the deck of the ship), to provide advance reconnaissance for boarding personnel. - Produced system specifications - Developed maritime interdiction operations UGV prototype - Conducted final testing - Produced final report 4) Cargo Unmanned Ground Vehicle - The goal of this project is to determine the feasibility of reducing the exposure of Marines to lethal attacks by replacing a portion of the manned vehicles in logistics convoys with unmanned vehicles. Two Medium Tactical Vehicle Replacements (MTVRs) will be autonomized, and a third MTVR will be equipped with an Operator Control Unit (OCU). This project is advancing the current state of robotics through the development of its perception technology (including methods of sensor data fusion and object classification) and methods of GPS-denied navigation. - Completed system build for initial MTVR as a UGV			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Completed system build for initial MTVR with Operator Control Unit - Conducted Limited User Assessment - Conducted Limited Objective Experiment - Initiated system build for second MTVR as UGV 5) Virtual Autonomous Navigation Environment - This project will assist in developing a Virtual Autonomous Navigation Environment (VANE) computational testbed with standard APIs/interfaces and environmental representation to facilitate assessment of UGV semi-/autonomous navigation performance. The ANVEL is a desktop application designed to run in real-time with the capability to interact with the HPC constructive geo-environmental CTB for sensor evaluations. No work was performed in FY2011.			
FY 2012 Plans: 1) Counter Tunnel Exploitation/Mapping - Develop Autonomy Architecture - Develop 3D Mapping Capability - Integrate 1st generation Sensor Suite - Miniaturize Sensor Suite - Conduct experiments of the Bore hole apparatus and the snakebot 2) Cargo Unmanned Ground Vehicle - Finalize system build for second MTVR as UGV - Conduct second Limited User Assessment - Conduct Limited Objective Experiment for Logistics Mission 3) Virtual Autonomous Navigation Environment - Complete the development of a high-impact, releasable version of the ANVEL - Develop scenario setup and mission plan assignment - Create runtime scene modifications for rapid scenario variations - Develop geo-specific environments for virtual UGV performance evaluations - Integrate sensor models for lower-fidelity desktop simulations - Implement and verify high-fidelity vehicle terrain interface with deformable ground effects - Update technical documentation and user guide			
FY 2013 Plans: 1) Counter Tunnel Exploitation/Mapping - Integrate sensor suite onto the platform - Conduct user assessment of the system - Finalize report on system progress and development			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
2) Other projects for this area will be determined by 4QFY12			
Title: Navigation	1.868	2.533	-

Description: Development of reliable motion planning, path planning, obstacle detection/obstacle avoidance, characterization, and decision analysis capabilities based on the perceived environment and specific missions outlined for the robot.

FY 2011 Accomplishments:

1) Autonomous Navigation for Small Unmanned Ground Vehicles - The ANSU program focuses on moving technologies from the laboratory to a realistic operational environment, specifically technologies that will advance the autonomy of small systems in a practical and robust manner. Specific technologies to be addressed include obstacle detection/obstacle avoidance (OD/OA), autonomous navigation, retro-traverse, non-GPS waypoint navigation, guarded tele-operation and other tactical behaviors for small vehicles.

- Developed algorithm to stitch successive 3D lidar scans
- Developed algorithm for enhanced obstacles detection
- Fused stereo vision data with lidar data
- Developed algorithm for enhanced obstacle avoidance
- Developed and integrate illuminator
- Developed algorithm for vegetation classification
- Refined control and behavior algorithms
- Demonstrated enhanced behaviors

2) Adaptive Navigation Systems - The purpose of this project is to develop and demonstrate an advanced modular and adaptive inertial navigation system for small UGVs. The target use of the system is to aid small UGV navigation in GPS-denied, nighttime environments, where little to no structure exists in the environment to use as an external reference. The effort will result in an inexpensive, small, modular and robust inertial navigation system appropriate for small UGVs that is adaptable to numerous different platforms and external sensor inputs.

- Phase II system design document, including modular open architecture, software and hardware reference design, documented communication interface
- A fully functional prototype system, software and hardware
- Source code delivered for all software

3) Collision Prediction Utilizing Traversability - The purpose of this project is to develop, demonstrate, and deliver two (2) prototype systems to 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 and generate predictions as to the expected path of the sense objects of to 10 seconds into the future. This project is advancing the state of robots by developing predictive tools to track objects based on only on object dynamics but also on the environment around the objects.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Algorithm design and created software architecture - Software Development - Algorithm hardening and hardware selection review - Test readiness Review - System Qualification Review - Technology demonstration 4) Long Range Global Positioning System-Denied Localization - This project will provide localization and navigation in an off-road environment for vehicles in GPS-denied areas by fusing features from internal and external sensors. To achieve global localization, the robot will match aerial imagery, digital elevation, road network maps, and other sources of data with features from on-board sensors such as 3D lidar and/or stereo cameras. As an added benefit of this collaboration, objects classified as obstacles from the internal sensors can be matched with objects from aerial imagery, so that the robot can infer obstacles with increased probability in the images at much farther ranges. This project is expected to start in FY2012. 5) Autonomous Assisted Mobility for Small UGVs - Development, integration, and demonstration of an autonomy package / payload to provide mobility assist functionalities during UGV operation. Specific capabilities will be enabled through the utilization of onboard sensors and vision systems and will assist the operator in navigating challenging terrains and obstacles by autonomously reconfiguring the robotic system to maintain stability and intended course. This project is expected to start in FY2012. 6) Tipover Prevention Behaviors - This project will produce tip-over prevention behaviors for unmanned ground vehicles. The behaviors will provide an operator or autonomous controller with the stability feedback necessary to avoid a tip-over event. This project will set a precedent for how future payloads will communicate their inertial properties to a host platform. - Hardware selection and integration - Prediction algorithm evaluations - Prediction algorithm optimization - JAUS message 1st draft - Algorithm integration real-time on robot - Tip-over early warning demonstrates on OCU - Tip-over warning tested on large UGV			
FY 2012 Plans: 1) Collision Prediction Utilizing Traversability - Advanced module development and hardware upgrades - Phase 2 validation and tests - Technology demonstration and End User Support 2) Long Range Global Positioning System-Denied Localization			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Complete study and evaluation of possible external data sources (aerial imagery, DTED, road/route networks, aerial lidar libraries, etc.). That study will include a evaluation of how well those data sources can be match to a like set of multi-modal onboard sensors. An initial design will be development and implemented on a relevant UGV. Different combinations of external data sources and onboard sensors may be evaluated to determine that best combination. 3) Autonomous Assisted Mobility for Small UGVs - Development of autonomy package and payload to provide mobility assist functionalities during UGV operations. - Development and integration of onboard sensors and vision systems. - Development of behaviors such as auto CG adjustment, automatic flipper and manipulator configurations. 4) Tipover Prevention Behaviors - Reactive behavior software integrated on a robot with static payloads in rough and sloped terrain. ***FY 2013 Plans:*** 1) Long Range Global Positioning System-Denied Localization - Develop the algorithms to match the external data to the onboard sensor data - Reference design and software will be delivered with full Government rights and as open source so that the larger UGV community can make use of and build on it 2) Autonomous Assisted Mobility for Small UGVs - Combination of separate capabilities to enable autonomous reconfiguration of the platform to maximize the mobility performance of the UGV. - Technology demonstrations and assessments of the technology will be performed to examine utility of the technology in operational contexts. 3) Tipover Prevention Behaviors - Reactive behavior software integrated on a robot with dynamic payload in rough and sloped terrain. - Report recommending a JAUS message format for inertial and kinematic properties of robots and payloads. 4) Other projects for this area will be determined by 4QFY12			
Title: Perception ***Description:*** Development of post-processing software technologies (proprioceptive and/or exetroceptive) which will enhance unmanned ground vehicle perception capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions. ***FY 2011 Accomplishments:*** 1) Urban Environment Exploration - This project is developing a suite of behaviors that enable UGVs to navigate and explore an urban environment with multiple building structures and where GPS is unreliable. The suite of behaviors are developed to be	3.170	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
modular and independent of one another within the Autonomous Capability Suite (ACS) autonomy framework, so that any subset of capabilities can be combined and ported to different vehicle configurations. - Develop/integration of multi-story mapping behavior and stair climbing behaviors. - Large-scale, multi-story mapping optimization - Refinement of enhanced dead reckoning and adaptive localization, simultaneous localization and mapping, frontier-based exploration, goal generation, goal selection, and path planning behaviors. - Total behavior fusion and optimization - User performance testing and evaluations - Results analyzed and close out report created 2) Urban Environment Modeling - The purpose of the UrbEM program is to develop, mature, and demonstrate technologies that will provide rich 3-dimensional models of complex urban environments. The models will be used for path/mission planning, navigation, and localization and possibly by the Warfighter as a mission planning and training tool. The UrbEM project seeks to harness sophisticated algorithms and readily-available cameras to generate similarly accurate results at much lower cost and sensor complexity. - Sensor development, integration, and modeling - Software integration and testing - Demonstration of a 2x2 city block model - Demonstration 10x10 city block model - Project final report and final software delivery 3) Real Time Radio Modeling - The goal of the Real Time Radio Modeling for Robotics project for FY11 is to integrate and demonstrate the capability to perform tradeoff analysis of different radios and waveform technologies in performance of the tele-operation functionality in a simulated relevant mission environment. - Integrate PEO-I Communication Effects Server with Joint Tactical Radio System (JTRS) - Integrate JTRS with TARDEC Image Generator (IG) - Integrate JTRS with TARDEC UGV - Development/Integration of COFDM: Qualnet developers from SNT have offered to provide COFDM models. These models can be updated and integrated into the Qualnet tool as needed to measure their performance on streaming video. RS JPO is interested in evaluating COFDM performance on streaming video - Development of Common Data Link (CDL) Model - Development of Digital Data Link (DDL) Model - COFDM/CDL/DDL JTRS Comparison Analysis - Integration of Building Properties of the systems into the model 4) Long Range Obstacle Detection - Develop vehicle intelligence, behavior, and sensor payloads to field an autonomous long-range obstacle-detection and avoidance capability. Result will increase the capability of unmanned ground vehicles (UGVs)			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
to respond to positive, negative, and moving obstacles. The target use of the system is to aid UGV navigation when moving at speeds of 60-100 kph, in both daylight and nighttime environments on primary and secondary roads. - Determined Sensor Solution - Initiated sensor processing algorithm development - Initiated prototype development - Conducted early performance testing - Initiated system integration onto UGV platform ***FY 2012 Plans:*** 1) Real Time Radio Modeling - Integration with Building Properties into the model - Integration of Building Properties with TARDEC IG - Integration of Building Properties with TARDEC UGV - Development of Urban Canyon Models - Building Clearing/Urban Canyon Comparison Analysis - Development of rain, snow, wind, and smoke models 2) Long Range Obstacle Detection - Finalize sensor processing algorithm development - Finalize prototype system development - Complete system integration onto UGV platform - Conduct performance verification testing - Conduct final demonstration - Compile/deliver final report ***FY 2013 Plans:*** 1) Real Time Radio Modeling - Development of rain, snow, wind, and smoke models - Integration with TARDEC IG - Integration with TARDEC UGV - Weather Comparisons Analysis 2) Other projects for this area will be determined by 4QFY12			
Title: Vision/Sensors	2.030	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: Development of technologies (hardware and software) which will enhance unmanned ground vehicle sensory (visual, audible and/or tactile) capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions. ***FY 2011 Accomplishments:*** 1) Miniature 3D Spatial Phase Sensor - Mature, miniaturize and further develop the 3D Spatial Phase Imaging (SPI) technology. SPI technology addresses fundamental limitations of other sensor technology such as stereo-vision and lidar. The SPI Sensor is not a range sensor but does provide 3D surface detail in far greater resolution than any other technology currently identified. When combined with a ranging technique like stereovision or lidar the SPI Sensor will greatly enhance the perception capabilities of unmanned ground vehicles. - Receive relevant data from 2nd generation sensor at SSCPAC for Government evaluation and algorithm development. - 3rd generation sensor development is currently ahead of schedule but still contains risk due the significant design effort required to miniaturize the Hyper-X processing board to the desired size. 2) Very Low Cost Light Detection and Ranging System - The development of a low-cost sensor capable of providing textured 3D range maps with automatic terrain classification provides significant new capabilities for the Warfighter. This device can be used in the automation of ground vehicles or the data can be directly used by the Warfighter to improve situational awareness. - Obstacle Detection and Classification - Range data with per-point terrain classification (output machine readable) - Situational Awareness - Texture mapped 3D model of environment (output human readable) - Teleoperation - Low Latency video stream (output human interpretable) ***FY 2012 Plans:*** 1) Very Low Cost Light Detection and Ranging System - Improve warfighter agility, survivability, lethality, and effectiveness by enabling lower-cost UGVs/SUGVs with superior situational awareness. - Integrate a set of existing technologies with minimal modification to realize a sensor package capable of generating 3D depth/ image models of the environment. ***FY 2013 Plans:*** 1) Projects for this area will be determined by 4QFY12			
Accomplishments/Planned Programs Subtotals	9.673	10.954	-

	FY 2011	FY 2012
Congressional Add: Autonomous Machine Vision for Mapping and Investigation of Remote Sites	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012
FY 2011 Accomplishments: -Physical demonstration of the proposed system.		
Congressional Add: Joint Robotics Training Program	-	-
FY 2011 Accomplishments: 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. -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	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0603711D8Z : *Autonomous*	9.567	9.756	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 0604709D8Z : *Robotics*	4.049	2.782	0.000		0.000	0.000	0.000	0.000	0.000	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-4, RDT&E Schedule Profile: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

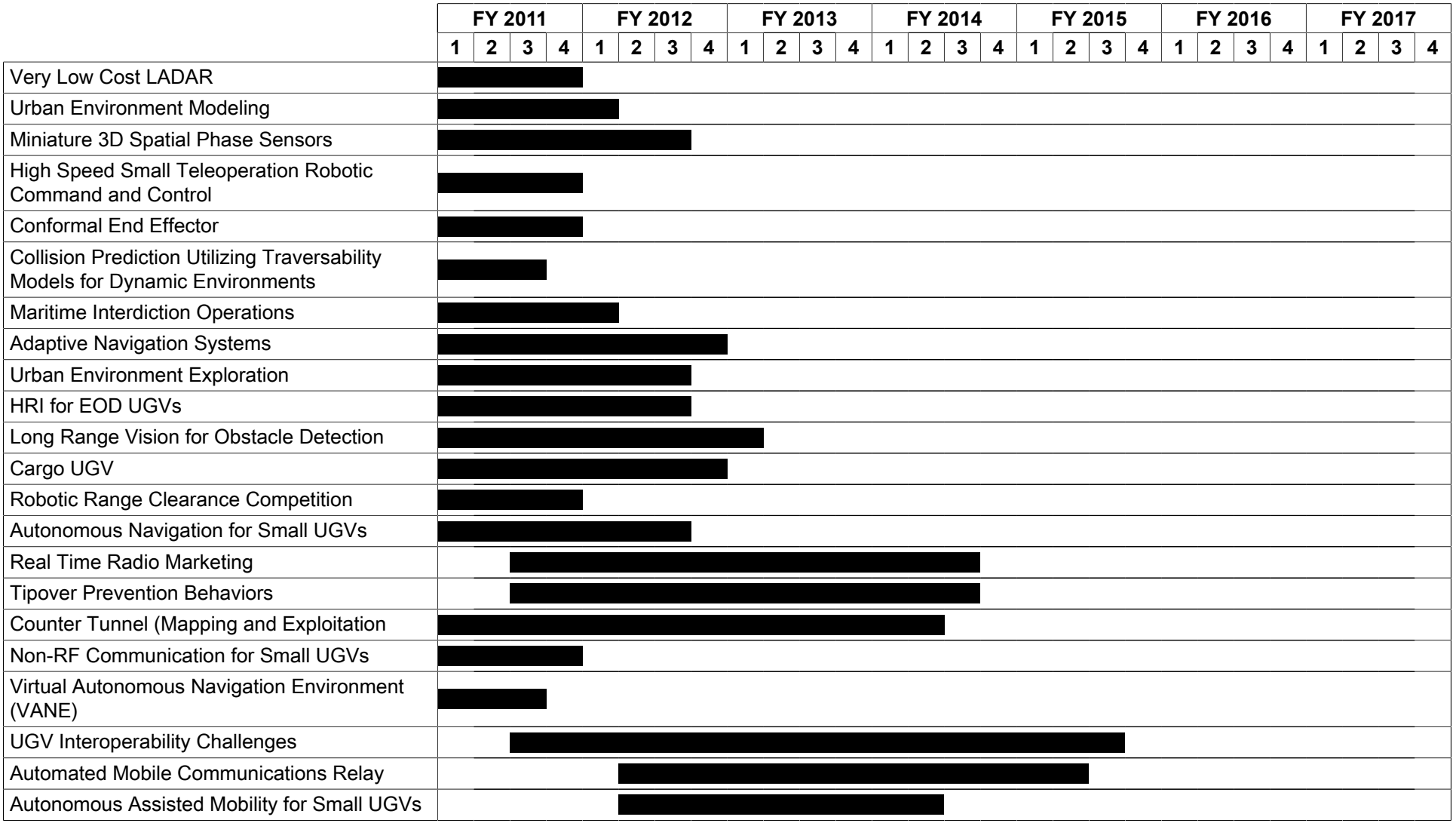

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603709D8Z: *Joint Robotics Program*	PROJECT P709: *Joint Robotics Program*

	FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Long-Range GPS Denied Localization/ Navigation in Off-road Environments						[redacted]																						

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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
Very Low Cost LADAR	1	2011	4	2011
Urban Environment Modeling	1	2011	1	2012
Miniature 3D Spatial Phase Sensors	1	2011	3	2012
High Speed Small Teleoperation Robotic Command and Control	1	2011	4	2011
Conformal End Effector	1	2011	4	2011
Collision Prediction Utilizing Traversability Models for Dynamic Environments	1	2011	3	2011
Maritime Interdiction Operations	1	2011	1	2012
Adaptive Navigation Systems	1	2011	4	2012
Urban Environment Exploration	1	2011	3	2012
HRI for EOD UGVs	1	2011	3	2012
Long Range Vision for Obstacle Detection	1	2011	1	2013
Cargo UGV	1	2011	4	2012
Robotic Range Clearance Competition	1	2011	4	2011
Autonomous Navigation for Small UGVs	1	2011	3	2012
Real Time Radio Marketing	3	2011	3	2014
Tipover Prevention Behaviors	3	2011	3	2014
Counter Tunnel (Mapping and Exploitation	1	2011	2	2014
Non-RF Communication for Small UGVs	1	2011	4	2011
Virtual Autonomous Navigation Environment (VANE)	1	2011	3	2011
UGV Interoperability Challenges	3	2011	3	2015
Automated Mobile Communications Relay	2	2012	2	2015
Autonomous Assisted Mobility for Small UGVs	2	2012	2	2014

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

	Start		End	
Events	Quarter	Year	Quarter	Year
Long-Range GPS Denied Localization/Navigation in Off-road Environments	2	2012	2	2014

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 Sensor Applications Program*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	17.896	18.408	16.958	-	16.958	17.340	17.777	18.314	18.679	Continuing	Continuing
714: *Advanced Sensor Applications Program*	17.896	18.408	16.958	-	16.958	17.340	17.777	18.314	18.679	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. In coordination with an international partner, unique and innovative approaches are used to expand the performance envelopes. 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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	18.060	18.408	18.810	-	18.810
Current President's Budget	17.896	18.408	16.958	-	16.958
Total Adjustments	-0.164	-	-1.852	-	-1.852
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department adjustment	-0.005	-	-1.852	-	-1.852
• Congressional adjustment	-0.159	-	-	-	-

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Advanced Sensors Application Program	17.896	18.408	16.958
FY 2011 Accomplishments: Mission Support (Details provided in Defense-Wide classified book)			
FY 2012 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 Sensor Applications Program*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Mission Support (Details provided in Defense-Wide classified book)			
FY 2013 Plans: Mission Support (Details provided in Defense-Wide classified book)			
Accomplishments/Planned Programs Subtotals	17.896	18.408	16.958

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-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	39.628	62.007	75.941	-	75.941	72.637	63.447	63.358	64.160	Continuing	Continuing
P514: *Environmental Security Technology Certification Program*	39.628	62.007	75.941	-	75.941	72.637	63.447	63.358	64.160	Continuing	Continuing

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. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	30.419	63.606	39.703	-	39.703
Current President's Budget	39.628	62.007	75.941	-	75.941
Total Adjustments	9.209	-1.599	36.238	-	36.238
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	10.000	-			
• SBIR/STTR Transfer	-0.519	-			
• Other Program Adjustments	-	-1.599	36.238	-	36.238
• Defense Efficiency - Baseline Review Adjustments	-0.272	-	-	-	-

Change Summary Explanation

For FY 2013, $32.238 M was added for the Energy Test Bed and $4M for UXO Live Site Discrimination Demonstration.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P514: *Environmental Security Technology Certification Program*	39.628	62.007	75.941	-	75.941	72.637	63.447	63.358	64.160	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 2011	FY 2012	FY 2013
Title: Environmental Technology Demonstration/Validation	39.628	32.007	43.941

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 2011 Accomplishments:

In FY 2011 projects were funded to address priority DoD environmental requirements. Focused new investment topics for FY 2011 included: 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:

Funds are planned for continued investment in projects that address priority DoD environmental requirements. Focused new investment topics for FY 2012 include: 1) Long Term Management of Contaminated Groundwater; 2) Bioavailability Technologies and Tools; 3) UXO Live Site Demonstrations; and 4) Natural Resource Management. 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.

FY 2013 Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Funds are planned for continued investment in projects that address priority DoD environmental requirements.			
Title: Energy Technology Demonstration/Validation	-	30.000	32.000
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:*** Funds are planned to initiate 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 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. ***FY 2013 Plans:*** Funds are planned to continue investments in energy projects initiated in FY2012 that constitute the Installation Energy Test Bed Initiative.			
Accomplishments/Planned Programs Subtotals	39.628	62.007	75.941

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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 2013 Office of Secretary Of Defense		DATE: February 2012
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*

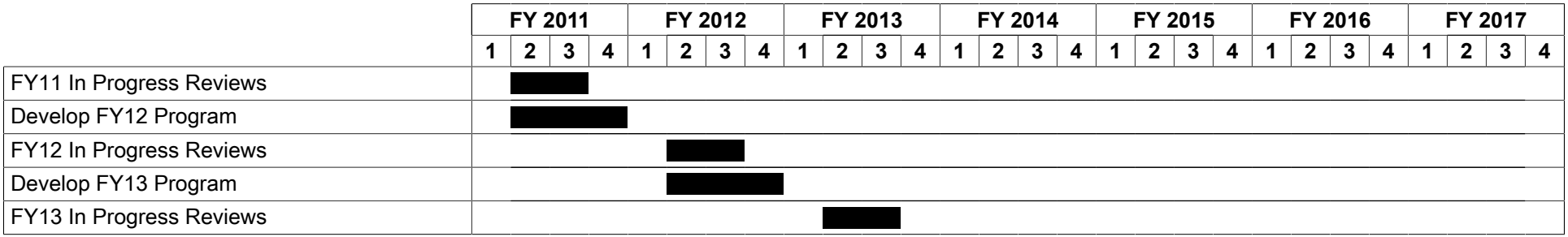

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603851D8Z: *Environmental Security Technology Certification Program*	**PROJECT** P514: *Environmental Security Technology Certification Program*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FY11 In Progress Reviews	2	2011	3	2011
Develop FY12 Program	2	2011	4	2011
FY12 In Progress Reviews	2	2012	3	2012
Develop FY13 Program	2	2012	4	2012
FY13 In Progress Reviews	2	2013	3	2013

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	14.273	14.544	13.231	-	13.231	11.779	11.681	10.563	10.755	Continuing	Continuing
920: *Humanitarian De-mining*	14.273	14.544	13.231	-	13.231	11.779	11.681	10.563	10.755	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 130 evaluations in 36 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, 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 and Low-Intensity Conflict (OASD SO/LIC). The Requirements Workshop involves representatives from Department of State (DoS), U.S. combatant commands (COCOMS) and mine-affected nations. Under OASD SO/LIC, 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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	14.735	14.996	15.372	-	15.372
Current President's Budget	14.273	14.544	13.231	-	13.231
Total Adjustments	-0.462	-0.452	-2.141	-	-2.141
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.327	-0.352			
• Economic Assumptions	-0.075	-	-	-	-
• Other Adjustments	-0.060	-0.100	-2.141	-	-2.141

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

Change Summary Explanation

The FY 2013 baseline budget was reduced due to fiscal constraints and higher priorities within the Department.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: 0603920D8Z - SO/LIC Humanitarian De-mining	14.273	14.544	13.231

Description: 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 130 evaluations in 36 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, 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 and Low-Intensity Conflict (OASD SO/LIC). The Requirements Workshop involves representatives from Department of State (DoS), U.S. combatant commands (COCOMS) and mine-affected nations. Under OASD SO/LIC, 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 2011 Accomplishments:

The HD R&D Program completed ongoing equipment developments/modifications and continued operational field evaluations from FY2010. New evaluations included the Raptor mine clearance system in Afghanistan, Improved Backhoe mine and vegetation clearance system in Sri Lanka, Mine Stalker Anti-Tank (AT) and Handheld Standoff Mine Detection System (HSTAMIDS) mine detection systems in Angola, Orbit Screen mine clearance system in Mozambique and Mine Disruptor, Portable UXO Drilling and Cutting neutralization system, Nemesis M3 vegetation clearance system, Rex vegetation clearance system and Luxor UXO detection system in Cambodia. The HD R&D Program supported 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 Guadalcanal. The program continued development, test and evaluation of prototype technologies

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
in the following areas: individual mine/UXO and minefield detection, mechanical mine/UXO and vegetation clearance, mine neutralization, individual soldier/deminer protection, and post-clearance quality assurance (QA). ***FY 2012 Plans:*** The HD R&D Program will complete ongoing equipment developments/modifications and continue operational evaluations from FY2011. New evaluations will include the Badger vegetation and mine clearance system in Guadalcanal; the Rex vegetation and mine clearance system in Sri Lanka; HSTAMIDS mine detection system and the Mini MineWolf mine and vegetation clearance system in Mozambique; the Minehound, Luxor, Scorpion, and Scout mine/UXO detection systems and Wolverine quality assurance tiller in Cambodia; the Pac-Mag UXO detection system in Laos; excavator mine sifting attachments and Terrapin mine clearance system in Lebanon; the Mine Stalker AT mine detector in Angola; and the Portable UXO Cutting System in Vietnam. 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, mechanical mine/UXO and vegetation clearance, mine neutralization, individual soldier/deminer protection, and post-clearance quality assurance (QA). ***FY 2013 Plans:*** The HD R&D Program will complete ongoing equipment developments/modifications and continue operational evaluations from FY2012. 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, mechanical mine/UXO and vegetation clearance, mine neutralization, individual soldier/deminer protection, and post-clearance quality assurance (QA).			
Accomplishments/Planned Programs Subtotals	14.273	14.544	13.231

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).

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

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 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

FY 2012 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

Basis of FY 2011 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.

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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	13.431	12.434	11.398	-	11.398	11.495	11.634	11.858	12.062	Continuing	Continuing
P923: *Coalition Warfare*	13.431	12.434	11.398	-	11.398	11.495	11.634	11.858	12.062	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, development, test and evaluation (RDT&E) projects with allies and coalition partners. CWP projects accelerate the delivery of high-quality solutions to warfighter problems, improve U.S. interoperability with its coalition partners, and strengthen global partnerships. Projects leverage foreign investments in technology and manpower to address Combatant Command (COCOM) requirements and support DoD RDT&E community undertakings. CWP can also help program offices convert U.S.-only projects into coalition solutions, with the expenses and benefits shared by the U.S. and international partners.

Current U.S. military strategy and the global security environment make coalition warfare and multinational operations fundamental features of the U.S. national security strategy. Coalitions provide a broad-base of technological, operational, and logistical support for military operations and ease the U.S. financial and manpower burdens associated with meeting military goals and objectives. In addition, effective responses to global humanitarian disasters require broad international, interagency, civilian, and non-governmental coordination. As national defense budgets decline, but threats to mutual security do not, coalition operations will continue to grow in importance.

Despite decades of conducting multinational operations, the United States and its partners continue to experience interoperability issues. Shortcomings in areas such as C4ISR (command, control, communications, and computers and intelligence, surveillance, and reconnaissance), battlespace awareness, and logistics reveal the complexities and challenges associated with multinational air, land, and sea campaigns and encumber warfighters' abilities to effectively and safely complete missions. Small investments in interoperability early in the research and development process can help avoid larger expenses related to adding coalition capability later in the development cycle. Partner nations participate in CWP to the extent permitted by security considerations and when such partnering is advantageous to the U.S. government.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	13.786	12.743	13.026	-	13.026
Current President's Budget	13.431	12.434	11.398	-	11.398
Total Adjustments	-0.355	-0.309	-1.628	-	-1.628
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.230	-0.224			
• Other Reductions	-0.125	-0.085	-	-	-
• Reduced Fiscal Guidance	-	-	-0.372	-	-0.372
• Program Adjustments	-	-	-1.256	-	-1.256

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P923: *Coalition Warfare*	13.431	12.434	11.398	-	11.398	11.495	11.634	11.858	12.062	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, development, test and evaluation (RDT&E) projects with allies and coalition partners. CWP projects accelerate the delivery of high-quality solutions to warfighter problems, improve U.S. interoperability with its coalition partners, and strengthen global partnerships. Projects leverage foreign investments in technology and manpower to address Combatant Command (COCOM) requirements and support DoD RDT&E community undertakings. CWP can also help program offices convert U.S.only projects into coalition solutions, with the expenses and benefits shared by the U.S. and international partners.

Current U.S. military strategy and the global security environment make coalition warfare and multinational operations fundamental features of the U.S. national security strategy. Coalitions provide a broad-base of technological, operational, and logistical support for military operations and ease the U.S. financial and manpower burdens associated with meeting military goals and objectives. In addition, effective responses to global humanitarian disasters require broad international, interagency, civilian, and non-governmental coordination. As national defense budgets decline, but threats to mutual security do not, coalition operations will continue to grow in importance.

Despite decades of conducting multi-national operations, the United States and its partners continue to experience interoperability issues. Shortcomings in areas such as C4ISR (command, control, communications, and computers and intelligence, surveillance, and reconnaissance), battlespace awareness, and logistics reveal the complexities and challenges associated with multinational air, land, and sea campaigns and encumber warfighters' abilities to effectively and safely complete missions. Small investments in interoperability early in the research and development process can help avoid larger expenses related to adding coalition capability later in the development cycle. Partner nations participate in the Coalition Warfare Program (CWP) to the extent permitted by security considerations and when such partnering is advantageous to the U.S. government.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Previous Year Continuing Projects	4.222	-	-
Description: Program provided additional funding to projects that began in earlier selection cycles. ***FY 2011 Accomplishments:*** Projects continued 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; state-of-the-art clip-on sensor fusion prototype devices for small arms; 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.			
Title: FY11 Continuing Projects	7.058	5.227	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: Program provided two years of funding for projects selected during the FY11 selection process. ***FY 2011 Accomplishments:*** Initiated projects that will provide: optimal EM sensor, sensor placement information, and sensor orientation information based on the local operating environment; combat system enhancements to address current shortfalls in high Northern situational awareness; and 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 2012 Plans:*** Projects selected during the FY11 selection process will receive their second year of CWP funding. Projects will complete the efforts started in FY11 and will deliver the stated capabilities.			
Title: Alternative Fuel ***Description:*** Project will flight test a fighter aircraft using jet fuel derived from alcohols as a stepping–stone to U.S. certification of this class of fuel for use in both military and commercial aviation systems. ***FY 2012 Plans:*** Component test, analysis and evaluation of fuel produced under the project. ***FY 2013 Plans:*** Additional fuel analysis and engine and airframe component tests.	-	1.000	1.000
Title: Battlefield Antennas ***Description:*** Project will use a breakthrough high permeability material to improve the gain and bandwidth of small directional antennas, thereby extending the effective frequency band of these antennas and reducing self-jamming with Counter IED systems. ***FY 2011 Accomplishments:*** Funding supporting research and development personnel at Army lab as well as contract management. ***FY 2012 Plans:*** Procure the metaferrites and model and fabricate candidate antenna designs for bench testing. ***FY 2013 Plans:*** Integrate the candidate antenna designs on to suitable platforms for validation of performance.	0.450	0.550	1.000
Title: Enhanced Maritime Awareness	0.195	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: Develop the means to connect maritime information/intelligence sharing systems, providing near real-time sharing of any data the Parties wish to make available to each other, enabling the needed situational awareness for decisive response to maritime threats. ***FY 2011 Accomplishments:*** Identify data sources necessary for the values added services, develop the information exchange schema and data models for the new data sources, and then share these data sources.			
Title: Helicopter Rapid Structural Repair In Theater ***Description:*** Develop a portable cold spray metallization system that can be used to facilitate rapid structural repairs of helicopters in theater. ***FY 2012 Plans:*** Concurrent development, testing, and evaluation for both structural repair processes development for magnesium and aluminum components and the design and construction of a second generation forward deployable field portable system. ***FY 2013 Plans:*** Finalize the construction of the portable system, systems prove out, data generation, and prove out the repair process(s) application using the portable system.	-	0.896	0.836
Title: Improved Renewable Energy Power System ***Description:*** Provide a portable power system utilizing renewable energy technologies including wind and solar by leveraging improvements in battery development technology and the Reusing Existing Natural Energy Wind-Solar (RENEWS) portable power system. ***FY 2012 Plans:*** Develop and integrate system components, and complete internal test and evaluation of the improved RENEWS system. ***FY 2013 Plans:*** Acquire integrated systems, produce system safety assessments reports and releases, and support participation in field evaluation opportunities.	-	0.250	0.250
Title: Mobile Operations in a Disconnected, Intermittent or Low-bandwidth Environment (MODILE) ***Description:*** Provide solution sets for coalition maritime operations in satellite restricted/denied environment problem. ***FY 2012 Plans:***	-	0.400	0.400

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Architecture development and basic engineering. ***FY 2013 Plans:*** Finalize development of the communication protocol, target architecture testing, application configuration, developing concept of operations and standard operating procedures, and implementing an at-sea demonstration of the end-to-end solution.			
Title: Network Centric Collaborative Targeting / Cooperative Electronic Support Measures Operations Gateway Software Live Fly Testing (NCCT/CESMO Live Fly) ***Description:*** Demonstrate an operational data gateway between the U.S. Network Centric Collaborative Targeting System and the NATO Cooperative Electronic Support Measures Operations System. ***FY 2012 Plans:*** Facilitate the development of the data guard, integration of the NCCT/CESMO gateway from the Systems Integration Lab into an operationally representative network, and support trial planning for the demonstration in CY2012. ***FY 2013 Plans:*** Support an in-depth analysis of data collected during CY2012 demonstration to include publishing a final test report and an initial concept of operations.	-	0.500	0.150
Title: Return to Duty ***Description:*** Develop and deliver a ruggedized, in-theater device capable of measuring and providing real-time, center-of-pressure information for assessment, treatment and return to duty of wounded warriors following mild traumatic brain injury. ***FY 2011 Accomplishments:*** Pilot testing of current prototype ***FY 2012 Plans:*** Incorporate visual and auditory components into the prototype; provide programming enhancements. ***FY 2013 Plans:*** Ruggedize prototype for field use. Modify prototypes based on feedback from first year pilot tests. Field test with continued clinical trials and in-theatre testing.	0.385	0.300	0.475
Title: Multinational Electromagnetic Spectrum Collaboration Technology ***Description:*** Develop technology that would enable partner nations, other government agencies, and non-governmental organizations an internet-based solution to request frequencies from host nations; to allow the host nation to assign and publish	0.157	0.466	0.480

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
frequencies specific to humanitarian assistance/disaster relief (HA/DR) operations; to build a database that would allow published frequencies to be accessible to all partners assisting in HA/DR effort. ***FY 2011 Accomplishments:*** Support U.S. participation within the Spectrum Management Technology Working Group (SMTWG) and initial database development. ***FY 2012 Plans:*** Purchase equipment including database server, web server SMT workstations and ancillary equipment to establish a testing and evaluation network ***FY 2013 Plans:*** Finalize the integration with enterprise database.			
Title: Space Situational Awareness Environmental Monitoring to Mitigate Severe Ionospheric Impacts to DOD C3I Systems in Africa (SSA-EM) ***Description:*** Fuse data from sensor networks to characterize the ionosphere over the African continent in near real-time. ***FY 2012 Plans:*** Purchase and deploy equipment. Establish data server to integrate data streams, develop and generate user products. Begin installing gap-filling ionospheric scintillation sensors and upgrade existing setups as needed for maximum reliability and data quality. ***FY 2013 Plans:*** Complete installations of all sensors, continue upgrading existing stations to cost-effectively maximize data reliability and robustness. Evaluate performance of scintillation products driven by fused data sources; identify weaknesses in regional models and mitigate as much as possible. Develop and test nowcasting tools geared towards AFRICOM using all available data.	-	0.475	0.475
Title: Tools for Hyperspectral Exploitation from Multi-Angular Spectra (THEMAS) ***Description:*** Develop a satellite angular mapping tool to characterize coastlines for targeting and shore assault operations. ***FY 2012 Plans:*** Capture multi-angular characterization of spectral response and associated supporting data in representative spectral libraries around a set of specific applications and scenarios (probable mine placement locations, disturbed earth, trafficability assessment, bathymetry, hazards/anomalies, bottom type, etc.). ***FY 2013 Plans:***	-	0.800	0.850

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Modeling and calibration/validation, encapsulating findings in software add-ons to existing commercial software. Reporting of results and documentation and beta-testing of software add-ons. Final demonstration, assessment, and reporting.			
Title: FY13 Project Selections ***Description:*** Program will conduct competitive nomination process to identify new projects. ***FY 2012 Plans:*** Program provides funding for projects selected during the FY13 selection cycle to prepare contracts and international agreements. Certain projects require funding to prepare for early tests or demonstrations. ***FY 2013 Plans:*** FY13 projects will be selected based on COCOM, Service, Joint Staff, OSD, and DoD Agencies priorities and requirements.	-	0.400	4.200
Title: Coalition Warfare Program Support ***Description:*** Program funds contractors to support CWP program management, which includes: establishing and publishing CWP policy and procedures; ensuring CWP projects are consistent with the policies and principles articulated in Department of Defense directives and regulations; providing assessment of program status and risk to higher authorities; briefing and providing recommendations to the Director, International Cooperation concerning new and continuing CWP projects; organizing and hosting periodic CWP meetings to foster international cooperation and improve U.S. interoperability with foreign partners; conducting on-site visits as necessary to determine project progress; managing the OSD-level CWP proposal selection process and coordinating financial activities at the OUSD(AT&L) level; briefing foreign embassy representatives and others as necessary on the status of CWP projects and interoperability initiatives; educating Combatant Command, Service, Agency, and OSD personnel about the CWP and the opportunity to improve coalition interoperability. ***FY 2011 Accomplishments:*** Contractor supported FY12 project selection process; revised program documentation to support FY13 selection process; managed ongoing projects; tracked project financial performance; consolidated project financial reporting to respond to AT&L and Comptroller queries; organized multinational event to educate U.S. and foreign RDT&E personnel about CWP and facilitate the initiation of cooperative projects; engaged in workshops and activities in support of improving U.S. interoperability with foreign partners. ***FY 2012 Plans:***	0.724	0.535	0.554

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Contractor will continue to provide management support of the CWP, to include evaluating proposals for FY13 funding, attending RDT&E meetings and events, and monitoring and managing projects' technical and financial performance. On-site contractor support reduced by 33% due to Efficiency Defense-wide cut. ***FY 2013 Plans:*** Contractor will continue to provide management support of the CWP, to include evaluating proposals for FY14 funding, attending RDT&E meetings and events, and monitoring and managing projects' technical and financial performance.			
Title: Interoperability and Collaboration Initiatives ***Description:*** Program provides funds in support of new or planned acquisition programs with the aim of 1) promoting coalition interoperability early in the requirements or technical development phases, 2) harmonizing common goals between U.S. and foreign partners, 3) improving management of collaborative efforts. Funds support workshops, risk reduction efforts, standards development, architecture analysis, and information management initiatives. ***FY 2011 Accomplishments:*** Supported COCOM risk reduction effort with foreign partner. Funded NATO interoperability projects. ***FY 2012 Plans:*** Program funded efforts aimed at improving U.S. interoperability with foreign partners and improving collaborative project processes. Initiated the development of a tool for improving the process for sharing information regarding international collaborative projects with COCOMs and Services. ***FY 2013 Plans:*** Program will fund efforts aimed at improving U.S. interoperability with foreign partners and improving collaborative project processes.	0.240	0.635	0.728
Accomplishments/Planned Programs Subtotals	13.431	12.434	11.398

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 2013 Office of Secretary Of Defense		DATE: February 2012
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 2013 Office of Secretary Of Defense		DATE: February 2012
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*

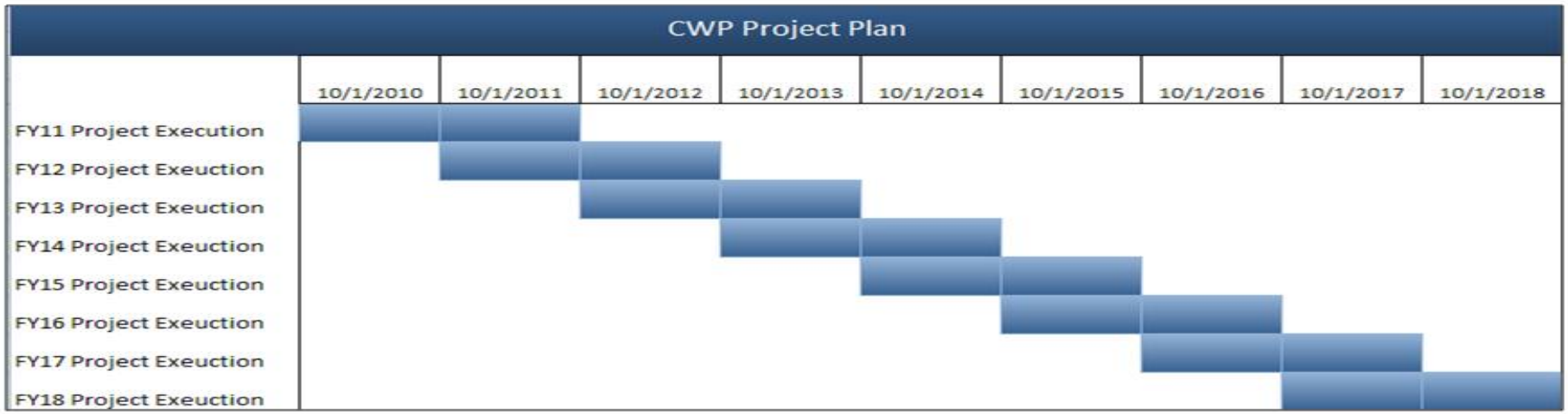

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603923D8Z: *Coalition Warfare*	PROJECT P923: *Coalition Warfare*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
FY10-FY11 Projects	1	2011	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
FY16-FY17 Projects	1	2016	4	2017

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 Policy and Oversight*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	38.463	34.153	3.283	-	3.283	3.366	3.448	3.595	3.601	Continuing	Continuing
P015: *Corrosion Protection Projects*	38.463	34.153	3.283	-	3.283	3.366	3.448	3.595	3.601	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, technology development, demonstration, and transition projects have been selected and funded since FY 2006. In FY 2009, the Military Departments assigned corrosion executives and began submitting reports to Congress on inserting corrosion planning into the acquisition process. The FY 2011 NDAA added a requirement for the DoD to report the amount of funds requested in the preceding year budget for each planned project or activity, as compared to the funding required for each project or activity. These funds provide a portion of the funds used to implement associated corrosion control projects and activities.

(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 submission instructions, evaluation procedures 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 2013 Office of Secretary Of Defense	DATE: February 2012
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 Policy and Oversight*

(U) The former DoD 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 2012 budget request will provide a critically needed resource to trigger even larger investment and cost avoidance.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	4.802	3.221	3.792	-	3.792
Current President's Budget	38.463	34.153	3.283	-	3.283
Total Adjustments	33.661	30.932	-0.509	-	-0.509
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.691	-0.932			
• Other Program Adjustments	-0.002	-	-0.509	-	-0.509
• Economic Assumptions	-0.201	-	-	-	-
• FFRDC	-0.145	-0.236	-	-	-
• Congressional Add	34.700	32.100	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)

	FY 2011	FY 2012
Project: P015: *Corrosion Protection Projects*		

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 Policy and Oversight*

Congressional Add Details ($ in Millions, and Includes General Reductions)	**FY 2011**	**FY 2012**
Congressional Add: *Corrosion Control, Prevention and Prediction through Polymer R&D*	34.700	32.100
Congressional Add Subtotals for Project: P015	34.700	32.100
Congressional Add Totals for all Projects	34.700	32.100

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 Policy and Oversight*	PROJECT P015: *Corrosion Protection Projects*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P015: *Corrosion Protection Projects*	38.463	34.153	3.283	-	3.283	3.366	3.448	3.595	3.601	Continuing	Continuing
Quantity of RDT&E Articles	0										

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, technology development, demonstration, and transition projects have been selected and funded since FY 2006. In FY 2009, the Military Departments assigned corrosion executives and began submitting reports to Congress on inserting corrosion planning into the acquisition process. The FY 2011 NDAA added a requirement for the DoD to report the amount of funds requested in the preceding year budget for each planned project or activity, as compared to the funding required for each project or activity. These funds provide a portion of the funds used to implement associated corrosion control projects and activities.

(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 submission instructions, evaluation procedures 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 2013 Office of Secretary Of Defense		DATE: February 2012
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 Policy and Oversight*	**PROJECT** P015: *Corrosion Protection Projects*

(U) The former DoD 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 2012 budget request will provide a critically needed resource to trigger even larger investment and cost avoidance.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Corrosion Prevention and Control Projects and Activities	3.763	2.053	3.283
FY 2011 Accomplishments: Rapid-Cure Single-Coat Potable Water Tank Coatings Optical Corrosion Sensors Post-Stressing Concrete Universal Coating Repair Methods Geopolymer Soil Stabilization and Dehumidification			
FY 2012 Plans: Vapor Phase Coatings High Strength Fastener Certification C-130 Non-Chrome Field Test Non-Hex Chrome Wash Primer Stress-Corrosion Cracking/Corrosion Fatigue on High Strength Steels			
FY 2013 Plans: Coatings and Corrosion Prevention Compounds Diagnostics, Prognostics, Monitoring and NDI Technologies			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 Policy and Oversight*	PROJECT P015: *Corrosion Protection Projects*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Prediction, Modeling and Supporting Technologies Maintenance and Cathodic Protection Technologies and Practices Materials Selection Processes			
Accomplishments/Planned Programs Subtotals	3.763	2.053	3.283

	FY 2011	FY 2012
Congressional Add: Corrosion Control, Prevention and Prediction through Polymer R&D	34.700	32.100
FY 2011 Accomplishments: 1. Funded additional corrosion prevention and control (CPC) technology insertion projects: a) Direct to metal Non-Skid coating b) Engineered touch up coatings c) Tri-Service application of portable CPC Spray gun d) Non-Destructive inspection through low-observable coatings e) Corrosion resistant coatings for MRAPs 2. Continuation of the University Corrosion Collaboration (UCC) research and development efforts. 3. The formation of Technology Corrosion Collaboration that now include not only the UCC members but the following new members: the Service Academies, Service CPC Laboratories, AF Institute of Technology and the Naval Post Graduate School. 4. Expansion of the Alternatives for Life Cycle Costs analysis 5. Development of several coatings and cathodic protection training courses and college equivalent engineering corrosion classes.		
FY 2012 Plans: 1. Fund additional corrosion prevention and control (CPC) technology insertion projects: a) Direct to metal Non-Skid coating b) Engineered touch up coatings c) Tri-Service application of portable CPC Spray gun d) Non-Destructive inspection through low-observable coatings e) Corrosion resistant coatings for MRAPs 2. Continuation of the University Corrosion Collaboration (UCC) research and development efforts. 3. The formation of Technology Corrosion Collaboration that now include not only the UCC members but the following new members: the Service Academies, Service CPC Laboratories, AF Institute of Technology and the Naval Post Graduate School. 4. Expansion of the Alternatives for Life Cycle Costs analysis		

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 Policy and Oversight*	PROJECT P015: *Corrosion Protection Projects*

	FY 2011	FY 2012
5. Development of several coatings and cathodic protection training courses and college equivalent engineering corrosion classes.		
Congressional Adds Subtotals	34.700	32.100

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.
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:

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 Policy and Oversight*	PROJECT P015: *Corrosion Protection Projects*

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.
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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 Policy and Oversight*	PROJECT P015: *Corrosion Protection Projects*

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	44.884	24.289	12.368	-	12.368	26.172	21.096	20.380	20.747	Continuing	Continuing
P440: *UAS Airspace Integration*	30.112	20.873	8.937	-	8.937	22.665	17.514	16.719	17.000	Continuing	Continuing
P442: *Interoperability*	14.772	3.000	3.000	-	3.000	3.060	3.121	3.184	3.247	Continuing	Continuing
P443: *Unmanned Systems Road Maps*	-	0.416	0.431	-	0.431	0.447	0.461	0.477	0.500	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	49.292	24.289	27.388	-	27.388
Current President's Budget	44.884	24.289	12.368	-	12.368
Total Adjustments	-4.408	-	-15.020	-	-15.020
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	4.394	-			
• SBIR/STTR Transfer	-1.136	-			
• Defense Efficiency - Baseline Review	-	-	-	-	-
• Defense Efficiency - Report, Studies, Boards and Commission	-2.784	-	-	-	-
• Defense Efficiency - Contract Staff Support	-0.223	-	-	-	-
• Economic Assumptions	-0.251	-	-	-	-
• Other Program Adjustments	-4.408	-	-15.020	-	-15.020

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P440: *UAS Airspace Integration*	30.112	20.873	8.937	-	8.937	22.665	17.514	16.719	17.000	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

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, provides 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 2011	FY 2012	FY 2013
Title: Unmanned Aircraft System Airspace Integration Initiatives	30.112	20.873	8.937
Description: Starting in FY 2010 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 UAS airspace integration requirements, standards, recommended practice guides as well as the modeling and simulation tools needed to validate the systems and standards.			
FY 2011 Accomplishments: ABSAA - Phase 1A - Contract awarded March 2011. Initiated development for a common, ABSAA system that satisfies common sense-and-avoid 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 program successfully conducted a System Requirements Review (SRR) and System Functional Review (SFR).			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Standards Development - Developed and initiated plan for development of UAS airworthiness certification criteria, standards, and methods of compliance for both fixed and rotary wing UAS (GCS and links included) for incorporation into MIL-HDBK-516. Developed, assessed, & published evolutionary DoD UAS Airspace Integration CONOPS defining the airspace use profiles. Initiated the development of a consistent methodology across all Military Services for developing a UAS Safety Case and a mid-air target level of safety (TLS) for UAS operations in all classes of airspace. Completed Target Level of Safety series of workshops and Safety Case Analysis of Alternatives. Developed UAS Airspace Integration Recommended Requirements for Terminal Area Operations, and a Sense and Avoid Blueprint tracking tool and definitions for Core Capabilities, Cross-Cutting Capabilities, and SAA attributes. Created UAS Profile Selection Guide and Visual Line of Sight Recommended Practices Guide. Modeling & Simulation (M&S) - Completed 2011 Modeling and Simulation Roadmap and UAS Technical Standards Development Process. GBSAA – The Federal Aviation Administration (FAA) granted the first Certification of Authorization (COA) allowing UAS flight in the NAS with a GBSAA system for operations at El Mirage, CA. In addition, Cherry Point MCAS made strides in FAA/NAVAIR system certification process with a COA approved for GBSAA test/data collection period, augmented with visual observers. In executing these first GBSAA-enabled UAS flights in the NAS, experiences in the following areas were gained: refinement of the process for safety case development and subsequent FAA approval; establishment of a data collection and mitigation tracking process to fulfill service certification and FAA requirements; and identification of an end-to-end process for developing, testing, qualifying, and implementing a GBSAA system. These flights utilized the first stage of GBSAA capability. The Phase 1 capability was advanced in the areas of data fusion, target classification, safety case development and initial algorithm design for maneuvering in airspace with other aircraft. A parallel development effort was conducted for Phase 2 (self-separation, including work on advanced maneuver algorithm requirements, optical sensor trade studies, and Human-Machine Interface (HMI) Studies for an improved user interface.			
FY 2012 Plans: ABSAA - Phase 1A –Continue development of the ABSAA system, further maturing the requirements and developing the preliminary software design culminating in a formal design review. The ABSAA design 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 Global Hawk and BAMS. The Phase 1A effort will complete in FY 2012 with the formal design review. Standards Development - Continue the update of MIL-HDBK-516 for airworthiness criteria, standards, and methods of compliance for both fixed and rotary wing UAS. Develop a consistent methodology across all Military Services for determining an appropriate Target Level of Safety (TLS) methodology for calculating accepted risk from operating in the National Airspace System. Tailor the safety assessment for additional UAS Profiles to include vertical and lateral transit operations. Perform requirements analysis to identify, develop, and document the performance requirements for UAS vertical and lateral transit operational profiles as			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
defined in the DoD Airspace Integration Plan. Coordinate performance requirements development within appropriate standards development organizations (SDOs). Develop UAS Airspace Integration Safety Process Guidebook and a UAS Recommended Practices Guides for Terminal, Lateral and Vertical Operations. Modeling & Simulation (M&S) - Provide modeling, simulation and analysis (MS&A) to the FY12 requirements and standards efforts as well as the safety analysis activities. GBSAA – Design, test, and implement a certified Phase 1 system with expanded capability, providing significantly enhanced GBSAA functionality. Design and test further expansion of the Phase 1 capability. Incrementally improve all SAA sub-system capabilities including: sensors, tracker, data fusion, target classifier, network and communications, maneuver algorithms, and user interfaces. Continue Phase 2 self-separation design effort. Conduct collaborative workshops to enable joint development and demonstration of a common set of requirements and standards for a universal GBSAA solution, as well as a common path forward for Software Certification to meet Airworthiness requirements. ***FY 2013 Plans:*** ABSAA - Development transitions to Service Program of Record funding with the initiation of Phase 1B. This multi-year EMD effort will design, develop, integrate, test, and deliver an operational and production representative Group 3-5 UAS scalable common ABSAA capability/solution demonstrated on Global Hawk. Standards Development - Continue the update of MIL-HDBK-516 for airworthiness criteria, standards, and methods of compliance for both fixed and rotary wing UAS. Deliver UAS Airspace Integration Safety Process Guidebook and Interim Guidelines for UAS Airspace Integration recommended Standards. Develop UAS Airspace Integration Recommended Requirements for Dynamic Operations and UAS Recommended Practices Guides for Operating Area and Dynamic Operations. Modeling & Simulation (M&S) - Provide modeling, simulation and analysis (MS&A) to the requirements and standards efforts as well as the safety analysis activities. GBSAA – Begin fielding of a GBSAA System with the certified Phase 1 capability to sites in the NAS. Design, test and implement the further expansion of the Phase 1 capability. Continue Phase 2 design effort. Incrementally improve all SAA sub-system capabilities including: sensors, tracker, data fusion, target classifier, maneuver algorithms, and user interfaces. Conduct collaborative workshops to enable joint development and demonstration of common standards, architectures and technologies that address UAS-specific issues across all services. Begin deliberate planning for GBSAA Phase 3, which is the integration of GBSAA and ABSAA.			
Accomplishments/Planned Programs Subtotals	30.112	20.873	8.937

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P442: *Interoperability*	14.772	3.000	3.000	-	3.000	3.060	3.121	3.184	3.247	Continuing	Continuing
Quantity of RDT&E Articles											

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 RQ/MQ-4 (Global Hawk/BAMS), MQ-1 (Predator/Gray Eagle), MQ-5 (Hunter), MQ-8 (Fire Scout), MQ-9 (Reaper), and future 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 2011	FY 2012	FY 2013
Title: UAS Common Ground Station Demonstration	14.772	3.000	3.000
Description: Develop and demonstrate an interoperable, standards-based, open ground station architecture for RQ/MQ-4 (Global Hawk/BAMS), MQ-1 (Predator/Gray Eagle), MQ-5 (Hunter), MQ-8 (Fire Scout), MQ-9 (Reaper), and future UAS. The intent is to improve joint- and coalition-interoperability and to promote competition through the implementation of open standards and open architectures. ***FY 2011 Accomplishments:*** Developed an "Open" approach to the v2.0 software plan. Transitioned scheduled projects to Programs of Record and user communities. Developed "3rd Party" vendor Integration Plan to reach out to additional vendors to develop services for future use. Established 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. Developed Interoperability Roadmap based on top down capabilities assessment. Conducted a review of remote video terminals and developed a plan for prototyping a government-owned "best of breed" version that can be released to vendors for open competition. ***FY 2012 Plans:*** Complete work begun in FY2011. Develop an "Open" approach to v2.1 (buildable architecture) which will be transitioned to Programs of Record and user communities. ***FY 2013 Plans:*** Develop and sustain governance over ground station open architecture, ensure model driven architecture stays current, and maintain software and architecture repository.			
Accomplishments/Planned Programs Subtotals	14.772	3.000	3.000

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P443: *Unmanned Systems Road Maps*	-	0.416	0.431	-	0.431	0.447	0.461	0.477	0.500	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 contained within P440 and P442 of this Program Element before FY 2012.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Unmanned Systems Roadmap	-	0.416	0.431
Description: Develops the Department's Unmanned Systems Roadmap and updates. ***FY 2011 Accomplishments:*** None. ***FY 2012 Plans:*** Update the Department's Unmanned Systems Roadmap and performed related studies supporting the Department's vision for unmanned systems. ***FY 2013 Plans:*** Update the Department's Unmanned Systems Roadmap and performe related studies supporting the Department's vision for unmanned systems.			
Accomplishments/Planned Programs Subtotals	-	0.416	0.431

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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	7.038	7.252	5.131	-	5.131	5.234	5.355	5.522	5.622	Continuing	Continuing
P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	7.038	7.252	5.131	-	5.131	5.234	5.355	5.522	5.622	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. The Program exists to optimize U.S. forces' ability to perform population-centric sensing, understand behaviors driven by social and cultural variables, and take effective courses of action in the full range of military operations. Program research enhances intelligence, surveillance, and reconnaissance (ISR) capabilities for understanding the Irregular Warfare environment and meeting the challenges of instability and violent extremism. Under three integrated program elements (PEs), the Program conducts applied research, matures and demonstrates advanced technology, and develops transition-ready components and prototypes. Work under PE 0604670D8Z creates transition-ready software tools that help intelligence analysts, operations analysts, operations planners, wargamers, and others represent, understand, and forecast sociocultural behavior at the strategic, operational and tactical levels. This program focuses on maturing, hardening, and validating human, social, culture, and behavior modeling 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 sociocultural models, tools, and capabilities to rapidly meet immediate and emerging warfighter needs. The work supports the testing, validation, and transition of 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 matures sociocultural relevant data and tools to provide essential sociocultural understanding and forecasting capabilities at the strategic, operational and tactical levels.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	7.459	10.309	12.926	-	12.926
Current President's Budget	7.038	7.252	5.131	-	5.131
Total Adjustments	-0.421	-3.057	-7.795	-	-7.795
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-2.800			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.194	-			
• SBIR/STTR Transfer	-0.161	-0.207			
• Economic Assumptions	-0.038	-	-	-	-
• FFRDC	-0.026	-0.050	-	-	-
• Other Program Adjustments	-0.002	-	-7.795	-	-7.795

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P670: *Human Social Culture Behavior (HSCB) Modeling Research and Engineering*	7.038	7.252	5.131	-	5.131	5.234	5.355	5.522	5.622	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This Program creates transition-ready software tools that help intelligence analysts, operations analysts, operations planners, wargamers, and others represent, understand, and forecast sociocultural behavior at the strategic, operational and tactical levels. The Program focuses on maturing, hardening, and validating human, social, culture, and behavior modeling 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 sociocultural models, tools, and capabilities to rapidly meet immediate and emerging warfighter needs. The work supports the testing, validation, and transition of 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 matures sociocultural relevant data and tools to provide essential forecasting capabilities at the strategic, operational and tactical levels.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Modeling Capabilities	2.463	3.406	3.041
Description: Mature and deliver sociocultural modeling capabilities for integration into existing DoD systems. Conduct validation testing of HSCB model based applications.			
FY 2011 Accomplishments: Integrated social network analysis tools to support International Security Assistance Force (ISAF) Network Effects Cell (NEC) operations. Also evaluated and began transition of other select tools to ISAF and implemented them as DCGS-A compliant "widgets". Delivered executable software for hybrid multi-modeling system for analysts and planners to assess the effects and implications of social strife, ethnic conflict, repression and insurgency. Demonstrated prototype "social radar" system for detecting leading indicators of instability. Integrated multiple technologies and supports geospatial visualization at multiple levels of granularity. Engineered and transitioned a data collection and hybrid modeling system for use by multiple users in monitoring and mitigating the spread of violent extremism.			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Mature and perform integration of models to enable forecasting of violent extremism at national level. Particular focus shall be on tools and systems that offer integrated, theoretically grounded hybrid modeling capabilities. Prototype components of a "social radar" system to support detection and tracking of indicators of instability, and exploration of mitigating courses of action. ***FY 2013 Plans:*** Mature and test transition-ready hybrid models to support forecasting of regional instability. Demonstrate social radar for operational decision support. Deliver operationally-testable methodology to support assessment of course of action (COA) impacts on the nature and extent of violent extremism.			
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 2011 Accomplishments:*** Engineered and delivered an operational prototype hybrid modeling system for analysis and forecasting of violent extremist threats. Prototyped dashboard for displaying multiple indicators of instability, using widget-based framework that enables drill down to supporting applications. ***FY 2012 Plans:*** Research and engineering of visualization software eliminated starting FY 2012.	1.760	-	-
Title: Data Collection ***Description:*** Develop and test methods and tools for collection of sociocultural behavior data, including and especially in denied areas. Demonstrate resources and tools for extraction, integrated analysis, and fusion of data from open sources at scale with particular focus on social media. Support development and testing of architectures and systems to enable access to structured, validated sociocultural behavior data across levels (tactical to strategic). ***FY 2011 Accomplishments:*** Created a Distributed Common Ground System-Army (DCGS-A) dataset for the Network Dynamics Team at the ISAF Joint Command. Open source data can be merged going forward. Prototyped data-related processing capabilities to support network analysis using the DCGS-A Cloud Ozone Widget Framework. Provides proof of concept for capabilities working together on common datasets. ***FY 2012 Plans:***	1.408	1.923	1.590

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Develop 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. Demonstrate integration and operation of multiple HSCB Program-supported tools in Cloud environment (e.g. DCGS-A). ***FY 2013 Plans:*** Demonstrate transition-ready automated data collection, management, translation and extraction tools to service HSCB models. Work with Cultural Knowledge Consortium to define and support sociocultural behavior data needs of the Combatant Commands and the research and engineering community.			
Title: Risk Reduction ***Description:*** Conduct the risk reduction activities necessary to ensure that HSCB technologies are validated, accurate, and address user/program of record requirements. ***FY 2011 Accomplishments:*** Evolved project-level metrics and assessment process. Developed innovative methodology for quantitative assessment of social science project metrics. Conducted full-day Technical Performance Evaluations of six projects. Refined multi-year Program level metrics, developed and began implementation of a process for applying them. Issued Broad Agency Announcement (BAA) to fill technical gaps and ensure the HSCB Program adapts appropriately to evolving operational needs. Completed selection of new projects. ***FY 2012 Plans:*** Conduct transition focused risk reduction activities designed to ensure that technologies targeted to end user and program of record requirements are brought through an appropriately scoped systems engineering and technical/theoretical assessment process. ***FY 2013 Plans:*** Continue to apply existing processes for evaluating discrete research projects. Gather data necessary to populate existing Program level measures of effectiveness.	1.407	1.923	0.500
Accomplishments/Planned Programs Subtotals	7.038	7.252	5.131

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• PE 0602670D8Z BA 2: *HSCB Applied Research*	7.199	8.602	6.771		6.771	6.923	7.100	7.305	7.438	Continuing	Continuing
• PE 0603670D8Z BA 3: *HSCB Advanced Development*	10.299	12.724	8.235		8.235	8.398	8.606	8.853	9.016	Continuing	Continuing

D. Acquisition Strategy

The Program produces software prototypes configured for use in programs such as the Distributed Common Ground System (DCGS). The program is executed by a BAA and a targeted RFP process. The BAA and RFPs were issued in FY 2011. Proposals were solicited from all DoD organizations, other federal agencies, and the commercial sector. Proposals were selected using review panels.

E. Performance Metrics

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

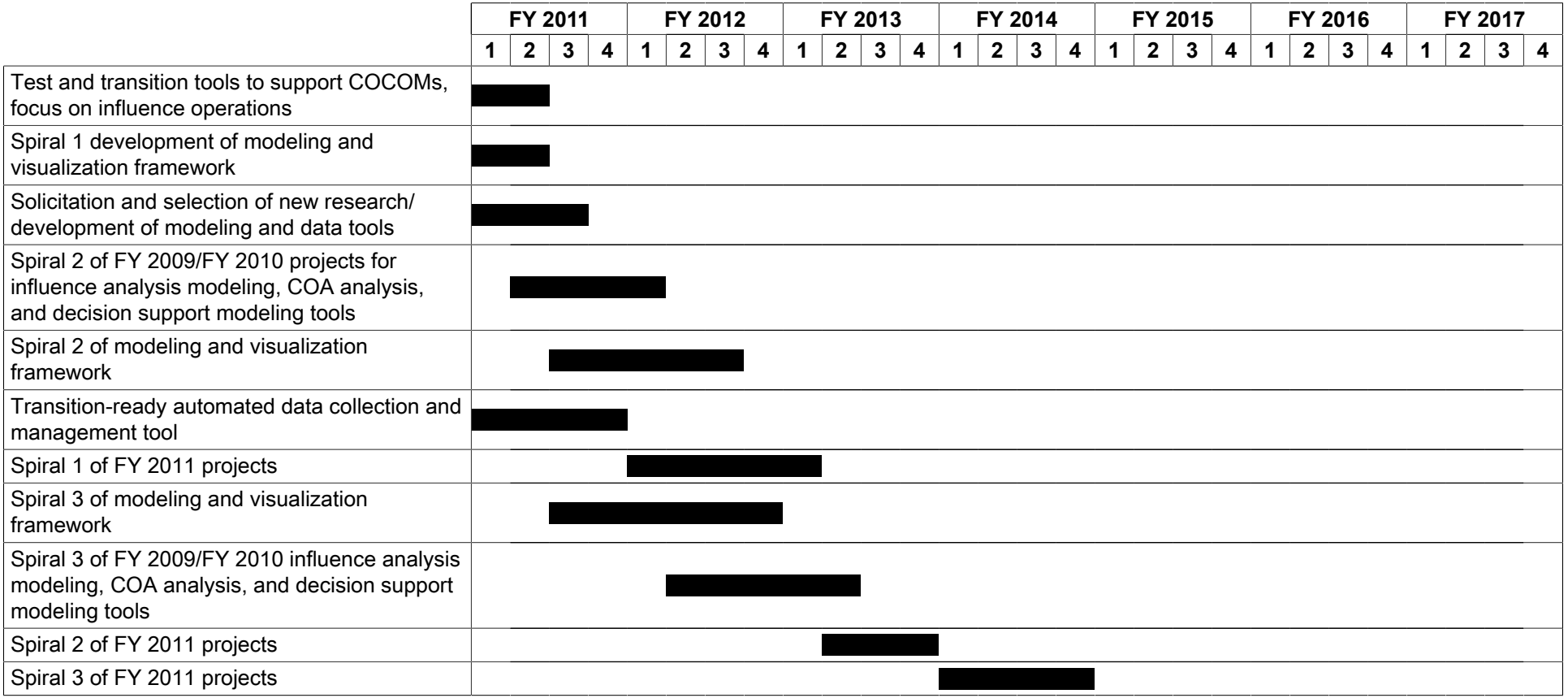

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604670D8Z: *Human Social 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**
Test and transition tools to support COCOMs, focus on influence operations	1	2011	2	2011
Spiral 1 development of modeling and visualization framework	1	2011	2	2011
Solicitation and selection of new research/development of modeling and data tools	1	2011	3	2011
Spiral 2 of FY 2009/FY 2010 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 FY 2011 projects	1	2012	1	2013
Spiral 3 of modeling and visualization framework	3	2011	4	2012
Spiral 3 of FY 2009/FY 2010 influence analysis modeling, COA analysis, and decision support modeling tools	2	2012	2	2013
Spiral 2 of FY 2011 projects	2	2013	4	2013
Spiral 3 of FY 2011 projects	1	2014	4	2014

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604775D8Z: *Defense Rapid Innovation Fund*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	123.101	192.805	-	-	-	-	-	-	-	Continuing	Continuing
P775: *Defense Rapid Innovation Program*	123.101	192.805	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Section 1073 of the National Defense Authorization Act (NDAA) for FY 2011 and the FY 2011 Defense Appropriation Act provide the Department of Defense with authorities and funds to facilitate the rapid insertion of innovative technologies into military systems, or into programs that meet critical national security needs, such as those supporting the resolution of operation challenges characterized by Joint Urgent Operational Needs (JUONs). The purpose of the DoD-wide RIF program is to perform a solicitation, evaluation and award of programs that support the aforementioned Congressional authorities and support the DoD goals of emphasis on rapid, responsive acquisition and engagement of small, innovative businesses in solving defense challenges.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	123.101	192.805	-	-	-
Total Adjustments	123.101	192.805	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-5.860			
• Congressional Adds	124.200	200.000	-	-	-
• Economic Assumptions	-0.631	-	-	-	-
• Federally Funded Research Centers (FFRDC)	-0.468	-1.335	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2011	FY 2012
Project: P775: *Defense Rapid Innovation Program*		
Congressional Add: *Defense Rapid Innovation Program*	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604775D8Z: *Defense Rapid Innovation Fund*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2011	FY 2012
Congressional Add Subtotals for Project: P775	-	-
Congressional Add Totals for all Projects	-	-

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Defense Rapid Innovation Program	123.101	192.805	-
FY 2011 Accomplishments: New Program. No accomplishments identified at this time.			
FY 2012 Plans: - This program element (PE) establishes the dedicated funding to carry out the duties as described in the FY 2011 National Defense Authorization Act for the rapid insertion of innovative technologies into military systems or into programs that meet critical national security needs, such as those articulated through a Joint Urgent Operational Need (JUON) statement. The Defense Rapid Innovation Program (RIP) emphasizes rapid response acquisition and the engagement of small innovative businesses in solving defense problems. The Department did not request funds for RIP in either FY11 or FY12. - The Rapid Innovation Program goals involve: transitioning Small Business Innovation Research Phase II projects that resolve JUONs or other critical national security needs into acquisition programs to include Acquisition Category I-IA, II, III, IV programs; leveraging ideas and technologies developed by the small business community and DoD-reimbursed Independent Research and Development (IR&D) defense industrial base tier 2 and 3 suppliers that solve DoD's operational challenges.			
Accomplishments/Planned Programs Subtotals	123.101	192.805	-

	FY 2011	FY 2012
Congressional Add: Defense Rapid Innovation Program ***FY 2011 Accomplishments:*** New Program. No accomplishments identified at this time.	-	-
Congressional Adds Subtotals	-	-

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604775D8Z: *Defense Rapid Innovation Fund*

F. Performance Metrics

No performance metrics identified at this time.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	18.180	12.716	-	-	-	-	-	-	-	Continuing	Continuing
P787: *Joint Systems Integration Command*	18.180	12.716	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.

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 Assistant Secretary of Defense for Research and Engineering (ASD (R&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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	19.413	13.024	12.107	-	12.107
Current President's Budget	18.180	12.716	-	-	-
Total Adjustments	-1.233	-0.308	-12.107	-	-12.107
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.308	-0.221			
• Other Program Adjustments	-0.755	-	-12.107	-	-12.107
• FFRDC	-0.071	-0.087	-	-	-
• Economic Assumptions	-0.099	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P787: *Joint Systems Integration Command*	18.180	12.716	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

Note

In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.

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 Assistant Secretary of Defense for Research and Engineering (ASD (R&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-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Title: Interoperability Technology Demonstration Center (ITDC) and Interoperability Assessments (IA)	10.474	6.327	-

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 2011 Accomplishments:
Conducted interoperability assessments and demonstrations of Command and Control, Computers, Communications, Intelligence, Surveillance, and Reconnaissance (C4ISR) developmental and fielded 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.

Afghanistan Mission Network (AMN) Coalition Interoperability Assurance Validation (CIAV) Assessments – AMN is the primary Coalition, Command, Control and Communications and Computers, Intelligence, Surveillance, and Reconnaissance (C5ISR) network in Afghanistan for ISAF forces. The CIAV process was developed to validate Coalition Mission Threads (CMT) and Coalition Tactics, Techniques and Procedures (CTTP) and identify and address ISAF interoperability problems. Conducted interoperability assessments of Battlespace Awareness, Counter-IED, and Joint Fires systems to ensure interoperability and functionality ISAF Joint Command. Assessment findings identified specific interoperability problems which software developers used to resolve issues prior to fielding in theater.

NATO Targeting Systems Interoperability Assessment (NTSIA) – Assessed changes to U.S. and NATO targeting system's data interoperability to include potential solutions to automate the exchange of target data and lists. This assessment successfully demonstrated the ability to automatically transfer targeting data from U.S. targeting systems and databases to NATO targeting systems and databases.

Collection Management Interoperability Assessment (CMIA) - Assessed the capability of Collection Management tools in coalition and joint environments to interact, synchronize and share information across multiple echelons. The project demonstrated the technical capability to exchange collection management data between U.S. and NATO systems.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Command and Control, Intelligence, Surveillance, Reconnaissance (C2ISR) Interoperability Assessment – Assessed correction of interoperability problems previously identified with imagery data exchange between the Global Command and Control System – Joint (GCCS-J) and Distributed Common Ground System –Army (DCGS-A) via a DCGS Integration Backbone (DIB) interface. Empire Challenge 11 (EC11) – EC 11 was a joint ISR emerging technology demonstration sponsored by the Office of the Under Secretary of Defense for Intelligence (OUSD(I)). Completed assessments that identified capability issues discovered and recommended solutions to mitigate or resolve those issues associated with 18 assigned capabilities. Coalition Warrior Interoperability Demonstration 2011 (CWID11) Selected Trial Assessments - CWID evaluates solutions aimed at enhancing interoperability and information sharing with multinational coalition partners. Provided assessment and engineering site support hosting 16 trails and conducting 9 warfighter utility assessments. The trials and assessments focused on C2 functions to improve CTF Commander situational awareness on air and missile defense systems, information-sharing portals, air and maritime situational awareness systems and network and management applications. Of the eight assessments completed, five trials met Sponsor Defined Requirements, two were rated as unsatisfactory, and one was marginal. Global Command and Control System-Joint (GCCS-J) Block V Post Implementation Review (PIR) Assessment – Completed 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 were met. Based on the information in the PIR Report, the Joint Staff Joint Command and Control senior leaders changed their recommended course of action for JC2 from "maintain" (e.g., keep the same functions as the GCCS-J currently has) to "MODIFY" (e.g., make the investment to improve, fix, modify) the JC2 to include fixing issues identified. GCCS-J PIR fulfilled the Clinger-Cohen Act and A-300 requirements for providing information through the DoD CIO to support congressional review requirements for major systems. Joint Integrated Air and Missile Defense Organization (JIAMDO) Joint Sensor Integration (JSI) Spiral 2 with Integrated Air and Missile Defense Common Operational Picture (IAMD COP) Assessment - Assessed data exchanges to enable improved, comprehensive identification within all combat systems' nodes, as they pertain to using an accurate common operational picture (COP) with enriched time sensitive targeting data. Tactical Edge Data Solutions (TEDS) JCTD Assessments – Conducting interoperability assessments focusing on movement of information and data between U.S. Army and U.S. Marine Corps battalion-level tactical-edge systems and applications with Joint and Coalition systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Command and Control (C2) Central - Expanded C2 Central's comprehensive system descriptions; document library; images; architectures; analysis and visualization tools capabilities; yellow pages and interactive calendar of events and further refined search engine capabilities for the user. Visual Command and Control Capability Analysis and Tradeoff Suite (VCATS) – Developed 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. 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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)	2.840	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 2011 Accomplishments:*** Intelligence, Surveillance and Reconnaissance (ISR) Video Dissemination Integration Assessments – Performed a technical integration to validate industry-standard video technology and networking protocols Livecast®, MediaFLO®, Inca-X®, and RealityVision® are interoperable with selected systems and architectures to support fielding decisions. National Security Agency (NSA) Secure Wireless LAN (SWLAN) Technical and Utility Pilot Assessment – Conducted a pilot implementation of NSA/I732 Secure Wireless LAN (SWLAN) Architecture, which evaluated network performance and user perceptions in an unclassified wireless network environment using commercial-off-the-shelf (COTS) software encryption in lieu of hardware encryption devices.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Command and Control Applications Over Broadband Cellular (C2ABC) Technical Assessment – Identified and evaluated solutions for integrating cellular technology with legacy C2 applications and assessed the commercial software LifeRing® and its capability to exchange legacy C2 data with a Smartphone. National Security Agency (NSA) Commercial Solutions for Classified (CSfC) Secure Wireless Local Area Network (SWLAN) Integration Pilot – Provided assistance to NSA in the development of a Suite B software encryption solution. This supports plans to field a capability to communicate over SECRET wireless networks without using Type-1 hardware solutions (e.g., SecNet 54, Talon, or KG-250s) Joint Internet Protocol Modem (JIPM) Assessment – Validated the operational use of the JIPM architecture to support Command and Control information exchange over a two way Global Broadcast Service environment extended over a broadband cellular wireless network. Broad Band Cellular 4G and Beyond Technical Integration Assessment – Integrated an interoperable 4G cellular solution that provides access to secure C2 and ISR applications using broadband cellular technology for dismounted users and assessed the ability of BBC4G networks to interoperate and support the transport of C2 data for applications such as Joint Automated Deep Operations Coordination System (JADOCS), Command and Control Personal Computer (C2PC), Adobe Connect, and Force XXI Battle Command Brigade and Below (FBCB2) while simultaneously providing software based encryption. Celestial Reach Joint Capability Technical Demonstration (JCTD) Assessment – Integrated a wide-band antenna solution for joint air, ground, and maritime operations and assessed the capability's utility in providing wide-band communications that support Command and Control (C2) and Intelligence Surveillance and Reconnaissance (ISR) applications to enroute users. Digitally-aided Personnel Recovery (DaPR) Integration and Interoperability Assessment - Conducted a technical and interoperability assessment of DaPR Personnel Recovery Support System (PRSS) standardized digital messages and applied forwarding rules to validate whether the developed message format can be passed digitally to the appropriate mission manager to initiate the recovery and then forward the information to rescue forces through existing tactical data links and Command, Control, Communications (C3) systems. ***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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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. 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	1.412	-	-
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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 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 2011 Accomplishments:*** Unified Cross Domain Management Office (UCDMO) Cross Domain Solutions (CDS) Baseline Capability Assessment of Radiant Mercury v5.0 – Conducted 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. Joint Planning and Execution System (JPES) and Application Segments Test and Evaluation Support – Provided an independent observation of the maturity of JPES Integrated Gaming System (IGS) and Rapid Time Phased Force Deployment Data Builder (RTB) prior to fielding. Global Combat Support System Joint (GCSS-J) Host Based Security System (HBSS) Cyber-Capability Support - Provided the required closed network environment to eliminate the risk of testing in an operational network to assess the information assurance of HBSS on the GCSS-J system prior to release to enhance usability and identify remaining capability gaps to the program management office. ***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.	3.454	2.917	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Afghanistan Mission Network (AMN) Coalition Interoperability Assurance Validation (CIAV) Engineering Support – Provided infrastructure, communications, network, information assurance, security, and engineering support as requested. Bold Quest 2011 (BQ11) Exercise Engineering Support – Provided infrastructure, communications, network, information assurance, security, and engineering support as requested. Coalition Warrior Interoperability Demonstration 2011 (CWID11) Support - Provided infrastructure, communications, network, information assurance, security, and engineering support as requested. Empire Challenge 2011 (EC11) C2 Systems Support – Provided infrastructure, communications, network, information assurance, security, and engineering support as requested. Army Joint Tactical Wireless Communications Capability (JTWCC) Assessment Support – Provided broadband cellular technical subject matter experts and a Command and Control (C2) Applications Over Broadband Cellular suite for use as a tool to evaluate multiple broadband solutions. C2 Capability in a Denied or Degraded Environment (C2D2E) – Provided infrastructure, communications, network, information assurance, security, and engineering support as requested. AFRICOM Judicious Response (AJR) Exercise Support – Provided infrastructure, communications, network, information assurance, security, and engineering support as requested. Joint Mission Thread Architecture Framework and Data Model (JMT AFDM) - Provided 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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. C2 Capability in a Denied or Degraded Environment (C2D2E) – Provide a C2 JTF environment with selected legacy systems. Joint Mission Thread Architecture Framework and Data Model (JMT AFDM) - Provide infrastructure, communications, network, information assurance, security, and engineering support as requested.			
Title: Transfer to Joint Stafff Accounts ***Description:*** In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications. ***FY 2013 Plans:*** In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.	-	-	-
Accomplishments/Planned Programs Subtotals	18.180	12.716	-

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).

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

E. Performance Metrics

Strategic Goals Supported: Joint Command and Control.

Planned Performance Improvement / Requirement Goal: 5 percent increase in assessments, integrations and demonstrations.

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

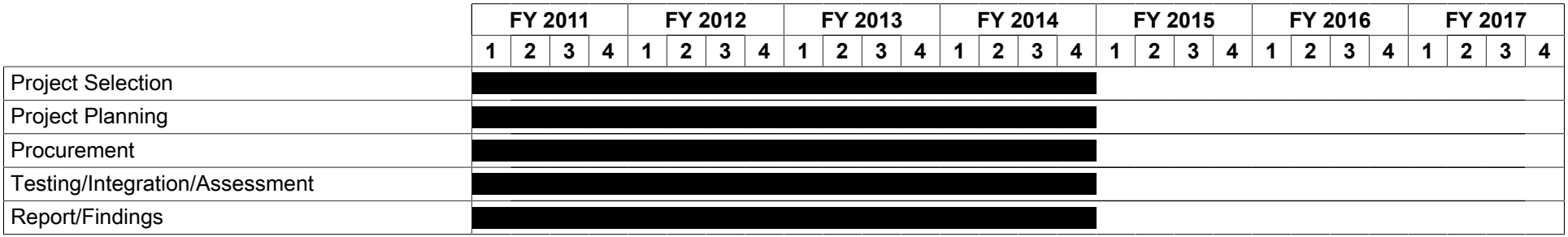

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0604787D8Z: *Joint Systems Integration Command*	PROJECT P787: *Joint Systems Integration Command*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Project Selection	1	2011	4	2014
Project Planning	1	2011	4	2014
Procurement	1	2011	4	2014
Testing/Integration/Assessment	1	2011	4	2014
Report/Findings	1	2011	4	2014

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	15.068	9.008	-	-	-	-	-	-	-	Continuing	Continuing
P857: *Joint Fires Integration & Interoperability*	15.068	9.008	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.

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 Assistant Secretary of Defense for Research and Engineering (ASD R&E) and converted the program element into a Defense-wide account.

Joint Requirements Oversight Council Memorandum (JROCM) 183-4, dated 8 October 2004, directed United States Joint Forces Command (USJFCOM) to establish a Joint Fires Support Organization. JROCM 241-05, dated 3 November 2005, validated the JFIIT mission. USJFCOM Directive Number 5170.2 dated 30 November 2007, 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 2013 Office of Secretary Of Defense					DATE: February 2012
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	16.637	9.290	8.180	-	8.180
Current President's Budget	15.068	9.008	-	-	-
Total Adjustments	-1.569	-0.282	-8.180	-	-8.180
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.368	-0.220			
• Other Program Adjustments	-1.055	-	-8.180	-	-8.180
• FFRDC	-0.061	-0.062	-	-	-
• Economic Assumptions	-0.085	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P857: *Joint Fires Integration & Interoperability*	15.068	9.008	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

Note

In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.

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 Assistant Secretary of Defense for Research & Engineering (ASD R&E) and converted the program element into a Defense-wide account.

Joint Requirements Oversight Council Memorandum (JROCM) 183-4, dated 8 Oct 2004, directed United States Joint Forces Command (USJFCOM) to establish a Joint Fires Support Organization. JROCM 241-05, dated 3 November 2005, validated the JFIIT mission. USJFCOM Directive Number 5170.2 dated 30 November 2007, 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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Joint Fires Integration & Interoperability (JFIIT) Assessments and Evaluations	10.576	-	-
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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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, training, and material solutions 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 2011 Accomplishments:***			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- 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 throughout the process. Benefits 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), continued improvement of 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. Conducted assessments of Joint training through collection and analysis of data on Universal Joint Tasks. Conducted trend analysis of assessments to form recommendations for improvements to Joint training. Assisted in development and implementation of architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during designated training 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 USA FORSCOM and USAF ACC, continued improvement of 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. Conducted trend analysis of assessments to form recommendations for improvements to Joint training. Assisted in development and implementation of architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during designated training 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 USA Training and Doctrine Command (TRADOC) and US Air Forces Europe (USAFE), continued improvement of 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. Conducted trend analysis of assessments to form recommendations for improvements to Joint training. Assisted in development and implementation of architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during select training 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) continued improvement to the tactical application of Joint ISR and the Integration of Air to Ground Operations at the Marine Corps Air Ground Combat Center, Twenty-			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Nine Palms, CA. Conducted assessments of Joint Training through collection and analysis of data on Universal Joint Tasks. Conducted trend analysis of assessments to form recommendations for improvements to Joint training. Assisted in development and implementation of architectures for integration and interoperability of systems. Provided feedback to exercise participants, observer trainers/controllers, and venue support staff during Spartan Advance and Spartan Resolve training exercises. Provided a post event debrief to the venue staff and an Exercise Summary Report. Continued efforts to define training support to Marine Corps Tactics and Operations Group (MCTOG). 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 USN Naval Surface Warfare Center (NSWC), provided 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 provided instrumentation, data collection, data capture, real-time mission monitoring, and feedback to participants via daily debriefings. Benefits include improved integration of world-wide sensors and improved Joint interoperability. - Continued support of the Coalition Combat Identification Advanced Combat Identification Demonstration (CCID ACTD) Bold Quest events. Provided analytical support to a Military Utility Assessment of coalition and US Combat Identification Systems. 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 to USAFCENT and the various Air Support Operations Groups (ASOGs) in their training of Joint Terminal Attack Controllers (JTACs) and Joint Fires Officer (JFOs) teams. Provided planning and execution support, assessment of training capabilities, and feedback to the training audience and trainers. Benefits 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), provided analysis support to assess technology integration and interoperability during JIAMDO Joint Sensor Integration event. Benefits 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, conducted an airspace control interoperability analysis. Benefits 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 airspace control training.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Continued 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. Continued Block 1 improvement efforts and assisted in the development of Block 2 engineering change proposals and Block 2 test and assessment documentation ***FY 2012 Plans:*** - JFIIT Mission transitions to Joint Fires Capability Assessments in FY 2012.			
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 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.	4.492	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- 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 2011 Accomplishments:*** - Continued to refine and enhance support to pre-deployment mission rehearsal exercises as requested by the Services and Combatant Commands. Joint fires issues identified during the rotational units pre-deployment exercises formed the basis for tactical level recommendations to address operational gaps and seams. - Continued to develop the Joint Intelligence, Surveillance, and Reconnaissance (ISR) Integration at the Combat Training Centers (CTC) integrated training initiatives. Provided Joint fires, Joint ISR, and network subject matter expertise to assist synchronization of joint tasks, facilitate joint mission thread execution, and training development and mentoring to Combat Training Center staff and observer controllers. These activities promoted the synergistic application of Joint capabilities to effectively conduct Joint fires. - Provided planning, execution, and analysis support for USAFCENT Atlantic Strike exercises increasing the combat readiness of Joint Terminal Attack Controllers (JTACs), Joint Fires Observers (JFOs) and Air Support Operations Squadron (ASOS) personnel. - Provided Joint fires subject matter expertise to the Joint Command and Control Capability Portfolio Manager to develop joint guidance, assessment, and analysis to proactively shape Service to achieve systems interoperability in Joint Fires related tasks. - Continued Joint Windows-based Warfare Assessment Model (JWinWAM) software development to support JFIIT assessment activities and the efforts of other government agencies as directed. - Supported the Joint National Training Capability (JNTC) certification, accreditation, and mitigation program and execution of Joint fires related JNTC exercises. - Developed Universal Joint Task (UJT) Additional Task Detail (ATD) for TA 3.3.2 Control Tactical Airspace, 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 CAS and Joint Fires Joint Mission Threads (JMTs). ***FY 2012 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- JFIIT Mission transitions to Joint Fires Capability Assessments in FY 2012. - Updates and revisions to Joint fires related doctrine, TTP, and other Joint publications.			
Title: Joint Fires Integration & Interoperability (JFIIT)- Joint Fires Capability Assessments	-	9.008	-
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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 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 a Common Operational Picture to battlespace managers. - 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. - 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). - Continue 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. - Continue development of the Tier One Joint Close Air Support (CAS) Joint Mission Thread (JMT) and beginning of the Tier One Joint Fires JMT.			
Title: Transferred to Joint Staff Accounts ***Description:*** In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications. ***FY 2013 Plans:*** In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.			
Accomplishments/Planned Programs Subtotals	15.068	9.008	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

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/ASD R&E, Services and COCOMs to approve the annual agenda of work and validate results.

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

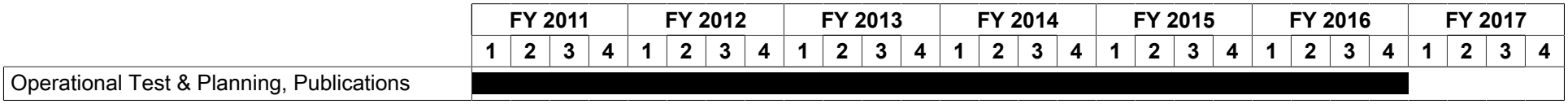

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0604828D8Z: *Joint Fires Integration & Interoperability*	**PROJECT** P857: *Joint Fires Integration & Interoperability*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Operational Test & Planning, Publications	1	2011	4	2016

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	19.349	-	-	-	-	-	-	-	-	0.000	19.349
017: *RTOC*	19.349	-	-	-	-	-	-	-	-	0.000	19.349

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, and supportability; thereby increasing 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, which ultimately reduce 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 FY 2012 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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	20.310	-	-	-	-
Current President's Budget	19.349	-	-	-	-
Total Adjustments	-0.961	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.366	-			
• Other Adjustments	-0.417	-	-	-	-
• FFRDC	-0.075	-	-	-	-
• Economic Assumptions	-0.103	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
017: *RTOC*	19.349	-	-	-	-	-	-	-	-	0.000	19.349
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, and supportability, thereby, increasing 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, which ultimately reduce 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 FY 2011, the Office of the Secretary of Defense (OSD) will transition the program to the Services. OSD will only fund those projects that will be completed during FY 2011. There will be no R-TOC PE funded carry-over projects into FY 2012. The Services will assume responsibility for the program in FY 2012.

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 2011	FY 2012	FY 2013
Title: Reduction of Total Ownership Cost Efforts	19.349	-	-
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 2011 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
In FY 2011, OSD transitioned the program to the Services. OSD will only fund those projects that are completed during FY 2011. No R-TOC funded carry-over projects into FY 2012. The Services assume responsibility for the program in FY 2012. The primary objective of the projects listed below continued to be the reduction of O&S costs for the affected systems. Army Projects: - The Army continued six FY 2010 projects and completed these projects in FY 2011. The HH-60 Forward Looking Infrared (FLIR) work continued to redesign the HH-60 FLIR turret to prevent damage during hovering and landings by reducing the size of the turret. - The Special Operations Forces (SOF) Common Avionics Architecture System (CAAS) continued work to demonstrate a common interface for the CAAS software. The goal was 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 continued to evaluate and implement a coating process to improve the reliability of the UH-72A main rotor blade in harsh environments. - The need for the Hellfire Warhead missile to carry multiple warhead models adds unnecessary operational burden. The Army proposed 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 continued one FY 2010 project and started and completed ten new projects in FY 2011. The primary themes for FY 2011 were power conservation, better corrosion control through improved surface coatings, and maintenance cost reductions through streamlining. - General illumination standards employed the use of fluorescent and incandescent lighting fixtures that had a short service life and were energy inefficient. One of the conservation projects included 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 reduced total energy costs by improving the steering. - The Navy proposed 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 used the ship's chilled water instead of demineralized electronic cooling water. - To control corrosion O&S costs the Navy proposed the use of prototype cameras in shipboard tank voids to analyze condition and structural degradation eliminating the need to open tank. The Navy also proposed to test alternative corrosion coatings on shipboard crash-cranes to reduce excessive corrosion related maintenance costs. - The Navy proposed 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 was			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
redesigned AN/AVS-9 mounts that were capable of using AA alkaline batteries, which resulted in increased durability and better electromagnetic performance. - Naval Seas Systems Command (NAVSEA) introduced the use of conditioned based maintenance practices in the new LCS class ships and mission modules to help control O&S costs. - NAVSEA proposed upgrading high-maintenance components in shipboard munitions transporters to reduce maintenance requirements. This project extended the periodic maintenance to a 5-year minimum and extended the service life of current assets to 25 years. - Naval Air Systems Command proposed to establish common procedures and practices for Airborne ForceNet (Afn) network maintenance, troubleshooting, and updates. This was applied immediately to EP-3 and P-3AIP platforms and will extend to P-8A and Broad Area Maritime Surveillance (BAMS). - The Next Gen Navy Cash project leveraged the industry electronic banking advances to streamline shipboard banking and expenditure transactions for Sailors at sea. The potential savings were equivalent to 31 percent of existing program costs. Air Force Projects: The USAF continued eleven projects started in FY 2010 and completed the projects in FY 2011. Nine projects were applicable across multiple systems to leverage investment funding. The projects included improving maintenance of the F-119 jet engine Integrally Bladed Rotor; eight projects focused on improving mid-level and depot level processes; and an effort to identify and qualify laser based alternatives to Metal Inert Gas (MIG), Tungsten Inert Gas (TIG), and electron beam (EB) manual welding processes for repairing F-15 and F-16.			
Accomplishments/Planned Programs Subtotals	19.349	-	-

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

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 FY 2012 the Services will be responsible for implementing procedures for selecting projects and funding the R-TOC program.

E. Performance Metrics

Not applicable.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RTOC	TBD	TBD:TBD	44.757	-		-		-		-	16.104	60.861	
		Subtotal	44.757	-		-		-		-	16.104	60.861	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 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 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 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 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	44.757	-		-		-		-	16.104	60.861	

Remarks

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	3.993	3.358	3.158	-	3.158	3.169	2.823	3.257	3.316	Continuing	Continuing
192: *Joint Electromagnetic Technology (JET) Program*	3.993	3.358	3.158	-	3.158	3.169	2.823	3.257	3.316	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	4.027	3.358	3.342	-	3.342
Current President's Budget	3.993	3.358	3.158	-	3.158
Total Adjustments	-0.034	-	-0.184	-	-0.184
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.034	-	-0.184	-	-0.184

Change Summary Explanation

Change Summary Explanation:
FY 2011: Includes Department Studies Contract Efficiency -0.334 million, Service Support Contracts efficiency -0.102 million. Program Adjustment -0.034 million.
FY 2012: No change.
FY 2013: Program Adjustment -0.184 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: JET Program Initiatives	3.993	3.358	3.158
FY 2011 Accomplishments: Program Planning and Support			
FY 2012 Plans: Program Planning and Support			
FY 2013 Plans: Program Planning and Support			
Accomplishments/Planned Programs Subtotals	3.993	3.358	3.158

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	22.270	24.836	-	-	-	-	-	-	-	Continuing	Continuing
P051: *Defense Acquisition Challenge Program*	22.270	24.836	-	-	-	-	-	-	-	Continuing	Continuing

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.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	24.344	-	-	-	-
Current President's Budget	22.270	24.836	-	-	-
Total Adjustments	-2.074	24.836	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	25.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.462	-			
• SBIR/STTR Transfer	-0.392	-			
• Economic Assumptions	-0.124	-	-	-	-
• FFRDC	-0.089	-0.164	-	-	-
• Other Program Adjustments	-0.007	-	-	-	-

Change Summary Explanation

Based upon a congressional add of $25.000 million, the Defense Acquisition Challenge Program (DACP) will continue its efforts into FY 2012.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P051: *Defense Acquisition Challenge Program*	22.270	24.836	-	-	-	-	-	-	-	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 151 projects; 96 projects have been completed to date; 69 met Service or Agency testing requirements and 49 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 2011	FY 2012	FY 2013
Title: Advanced Radio Frequency Distribution Unit (RFDU) for Improved SIGINT (Navy)	0.900	-	-
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 Accomplishments: Contracted for test articles in 3Q FY 2011. Test articles delivered during 4Q FY 2011. Commenced environmental testing and evaluation in 4Q FY 2011.			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Conduct environmental testing and evaluation in 1Q FY 2012. Perform range testing and shipboard installation and testing from 2Q – 3Q FY 2012. Complete technical report, closeout reports and procurement decision by the end of 4Q FY 2012.			
Title: Automated Digital Network System (ADNS) Wide Area Network (WAN) Optimization Challenge (Navy) ***Description:*** Test commercial off-the-shelf products to determine their suitability for deployment within the Fleet communications environment. Perform an assessment and quantify the benefits of the four key WAN Optimization functions; 1) Network Monitoring, 2) Quality of Service, 3) Advanced Compression and 4) Protocol and Application Acceleration. If deployed Fleet-wide, WAN Optimization technology has the potential to double the utility of this existing asset. ***FY 2011 Accomplishments:*** Completed laboratory based comparative vendor testing and evaluations from 1Q-4Q FY 2011. Initiated formal ADNS Program related transition processes including the Engineering Change Request in 4Q FY 2011. ***FY 2012 Plans:*** Perform at-sea trials during 2Q – 3Q FY 2012. Closeout report and procurement decision will occur during 4Q FY 2012.	0.900	-	-
Title: B-2 Stores Management System (SMS) Test Program Initiative (Air Force) ***Description:*** Tests an on-aircraft B-2 SMS diagnostic capability. SMS anomalies involving complex avionics architecture linked through Military Standard (MIL-STD) 1760 interfaces can jeopardize a B-2's ability to support its primary mission. On board SMS diagnostics will test configured weapon station interface serviceability, assess weapon release equipment integrity and troubleshoot end-to-end weapon stores functions. ***FY 2011 Accomplishments:*** Established and demonstrated a test set package, Smart Bomb Rack Assembly, including all interface hardware and associated level-three drawings for follow-on local manufacture. ***FY 2012 Plans:*** Closeout report and procurement decision by 4Q FY 2012.	1.800	-	-
Title: Biological Aerosol Confidence Check Device (Army) ***Description:*** Tests 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 war-fighter. ***FY 2011 Accomplishments:***	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Washington Headquarters Services (WHS) contract was awarded and the Joint Biological Point Detection System (JBPDS) delivered. Started intra and inter-variability testing of particle size distribution. ***FY 2012 Plans:*** The Program Manager (PM) will complete intra and inter-variability testing. Once testing is completed, the PM will decide whether to use the JBPDS for the current Joint Biological Point Detector System (JBPDS) and the Joint Portal Shield for the development of the Joint Biological Tactical Detection System (JBTDS).			
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, within 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 2011 Accomplishments:*** Conducted structural, environmental, and operational field testing of Ku/Ka-band 60 centimetres reflectors. Conducted field testing of Ku/Ka dishes (United States Special Operations Command (USSOCOM)). Constructed and tested revised petal latching mechanism for new extreme wind load requirements. Continued procurement of x-band assets for integration and field deployment. Fabricated and demonstrated Ku/Ka-band 60 centimetres aperture segmented reflectors, and achieved procurement decision. Over 400 antennas have been fielded to Special Operations units in FY 2011 with a future procurement anticipated to be up to 1000 units per year for the next five years.	0.500	-	-
Title: Conformal Warfighter Wearable Battery Power Source (CWS) (Army) ***Description:*** Test a wearable power source for the soldiers 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 2011 Accomplishments:*** Conducted ballistic texting with positive results and conducted environmental/military testing. Accomplished an engineering change to move battery to small arms protective inserts (SAPI) plate locations based on user test feedback. Provided first generation Safety Analysis Report. ***FY 2012 Plans:***	0.900	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Complete testing for soldier safety certification, procure 421 additional batteries with chargers for soldier/airman evaluation, close out Defense Acquisition Challenge (DAC) program testing before end of 3Q FY 2012, and continue further testing, using PM funding, for soldier evaluation into Limited Rate Initial Production evaluation.			
Title: Fully Integrated Fire Control Solution for Machine Guns (United States Special Operations Command (USSOCOM)) ***Description:*** Competitively evaluates integrated/modular fire control systems (FCSs) comprised of a family of machine gun day optics, thermal, and night vision devices. Project management (PM) is now pursuing two paths for final configuration: a modular system consisting of accessories that can be operated independently or together; and a sophisticated integrated FCS. The primary outputs and efficiencies to be demonstrated in the project are: (1) improved efficiency of machine gun employment incorporating mounts for FCS/accessory components with ability to quickly activate switches & functions; and (2) avoids RDT&E operations and support costs worth almost $4.500 million. ***FY 2011 Accomplishments:*** Received modular component test articles and conducted suitability and effectiveness testing during 1Q FY 2011. Developed rail interface system for .50 caliber M2 machine gun in 2Q FY 2011. Obtained safety confirmation/Laser Safety Review Board approval during 3Q FY 2011. ***FY 2012 Plans:*** Procure modified test items for integration test and evaluation in 1Q FY 2012. Conduct integration test through 2Q FY2012. Obtain Milestone C decision and fielding and deployment release by 3Q FY2012. Submit closeout report in 4Q FY 2012.	1.800	-	-
Title: Herculite XP Glass for Bombing Hazard Reduction (Air Force) ***Description:*** Tests a new high strength tempered glass which will provide blast and impact protection that is far superior to a traditional annealed or fully tempered glass. Herculite XP provides higher levels of protection, less glass weight, and creates cost efficiencies for Department of Defense's (DOD) barracks, medical facilities and other primary gathering facilities in Afghanistan and Iraq, and other military installations worldwide. ***FY 2011 Accomplishments:*** Completed level of protection testing. Test results led to qualified window designs and specifications for punched and storefront applications of Herculite XP glass.	0.900	-	-
Title: Hostile Fire Aid for the AN/AVR-2B Laser Detecting Set (United States Special Operations Command (USSOCOM)) ***Description:*** Validates new Operational Flight Program (OFP) software for the Army Navy Nomenclature Aviator-2B (AN/AVR-2B) laser detecting set currently fielded on Army rotary wing aircraft. The OFP software will detect hostile small arms and rocket propelled grenade fire events, and alerts the aircrew via existing on-board equipment. Primary outputs and efficiencies to be	0.910	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
demonstrated in the project are improved situational awareness and increased aircraft survivability and to avoid Research, Development, Test, and Evaluation (RDT&E), manufacturing, production, and operations and support costs worth approximately $63.668 million. ***FY 2011 Accomplishments:*** Installed and verified system functionality of an updated AN/AVR-2B A-kit on the Maverick Unmanned Aerial Vehicle (UAV) test platform in 3Q FY 2011. Completed software updates, and conducted algorithms/integration testing in 4Q FY 2011. ***FY 2012 Plans:*** Conduct live fire flight for technical/operational testing during 1Q FY 2012. Complete functional qualification testing and test reports in 2Q FY 2012. Obtain Milestone C decision and submit closeout report in 2Q FY 2012.			
Title: JP-8 Operated Modified Commercial Generator (Army) ***Description:*** Tests Jet Propulsion (JP-8) fueled modified commercial generator sets that are rated at one kilowatt to determine if they can meet US Army electrical and environmental requirements. If successful, benefits would include reduced fuel consumption, reduced weight burden on the war-fighter, and added capability via forward use of power sources. The primary benefit is to field first soldier-portable, logistic fueled, one kilowatt power source for tactical operations. ***FY 2011 Accomplishments:*** Delivered test articles to the Program Manager (PM) during 2Q FY 2011. Testing revealed that the generator needed significant modifications. Conducted edurance testing to ensure robustness. Searched for a contracting vehicle to conduct Electro Magnetic Impulse (EMI) and environmental testing. ***FY 2012 Plans:*** PM plans to complete EMI, environmental, electrical performance, noise level and mechanical testing. Consolidate findings and prepare final closeout report.	0.300	-	-
Title: Lightweight, Reliable, Increased Capacity Magazine for Special Operations Forces Combat Assault Rifle (SCAR) ((United States Special Operations Command (USSOCOM)) ***Description:*** Test a more reliable, lightweight polymer or heat treated hard anodized magazine for the SCAR MK17 (heavy). Once inserted in the weapon, it will prevent outside contaminants, such as sand, from entering the magazine or magazine well. The primary outputs and efficiencies to be demonstrated in the project are a more reliable Mark-17 (MK17) magazine with increased ammunition capacity and to avoid Research, Development, Test, and Evaluation (RDT&E) operations and support costs worth approximately $1.700 million. ***FY 2011 Accomplishments:***	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Received product samples and performed go/no go testing, which all samples from the original solicitation failed 1Q FY 2011. Canceled solicitation and negotiated with OEM for an improved magazine 2Q FY 2011. Procured OEM improved magazine test articles 3Q FY 2011. ***FY 2012 Plans:*** Deliver 100 production representative test units in 1Q FY 2012. Perform assessment/validation testing and report in 2Q FY 2012. Conduct a user assessment in the current area of responsibility during 3Q FY 2012. Submit closeout in 4Q FY 2012.			
Title: Lightweight Surveillance and Battle Damage Assessment Device (LW-SBDAD) (Army) ***Description:*** Test a lighter, smaller and cheaper alternative to the current binocular. The current M25 Stabilized Binocular is 4.5 pounds (lbs) and has bulky dimensions, which make it non user friendly. If successful, this project will reduce the size and weight by 40 percent and provide a cost savings of 40-60 percent per unit. ***FY 2011 Accomplishments:*** Released market survey during 3Q FY 2011 and completed phase one in 4Q FY 2011 with down-select to three candidates. ***FY 2012 Plans:*** Expect delivery of test articles by the end of 1Q FY 2012. Begin laboratory and operational testing at Aberdeen Proving Ground (APG). Laboratory testing will include Collimation, Resolution, Laser Eye Protection, Focus, and Image Tilt/Parallax testing. Other testing to includes environmental, and Man Power and Personal Integration Evaluations in various combat scenarios. Procurement decision expected in 3Q FY 2012.	1.000	-	-
Title: Low Cost SQS-53 Improved Sonar Acoustic Window (ISAW) (Navy) ***Description:*** Install and test an improved sonar acoustic window (ISAW) for the Army Navy Nomenclature/Sonar-53 (AN/SQS-53). 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, 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 2011 Accomplishments:*** Completed phase two of the sonar electronics groom, which includes light off, calibration, alignment, and layup of the sonar system. This phase will be completed during 2Q FY 2011. Conducted land based proof testing of ISAW prototype in 3Q FY 2011. Completed installation planning in 4Q FY 2011 for the FY 2012 shipboard installation and testing. ***FY 2012 Plans:***	1.570	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Complete test planning during 1Q FY 2012. Install new sonar cables, transducers, and ISAW during 2Q and 3Q FY 2012. At-sea testing of test article and project closeout by 4Q FY 2012.			
Title: Fire Resistant Modular Ghillie Suit and Ghillie Suit Accessory Kit (Army) ***Description:*** The Modular Ghillie Suit (MGSAK) and Ghillie Suit Accessory Kit (GSAK) upgrades 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 Accomplishments:*** Program Manager (PM) completed fielding full systems for sniper schools at Fort Benning, Fort Bragg and Marine Corps Base Quantico for user evaluation. Completed testing to verify the systems met the performance parameters and criteria of the basic Fire Resistance and durability. Completed Operational Testing to validate whether the MGSAK and GSAK met or exceed the durability and reliability requirements of the GSAK and Core Soldier System requirements. ***FY 2012 Plans:*** Procurement decision to be determined by the end of 2Q FY 2012.	0.600	-	-
Title: Next Generation Night Vision Imaging Technology (United States Special Operations Command (USSOCOM)) ***Description:*** Validates the use of an electron bombarded active pixel sensor (EBAPS) low-light camera, in place of image intensification (I2) tubes in visual augmentation systems. The EBAPS camera will be integrated into a handheld night vision system/platform to conduct project testing. The primary outputs and efficiencies to be demonstrated in the project are: (1) improved resolution, reduced power, increased detection and identification ranges, better combat security; and (2) avoids RDT&E and production costs worth approximately $1.500 million. ***FY 2011 Accomplishments:*** Conducted critical design review during 2Q FY 2011. Received integrated test article and analyzed completed internal vendor test data during 4Q FY 2011. ***FY 2012 Plans:*** Conduct combined developmental and operational testing through 1Q FY 2012. Publish test reports, submit production decision documentation, and complete closeout report in 2Q FY 2012.	0.500	-	-
Title: Package on Package Technology for Aviation Radio Communications-210 (ARC-210) (Navy) ***Description:*** Package on Package (POP) technology is a three dimensional stacking of two or more Ball Grid Array (BGA) microelectronic packages that enables increased capabilities and functionalities in limited space. POP significantly enables	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
capability and functionality growth in the ARC-210 Tactical radio. The primary outputs are increased interoperability and mission flexibility. ***FY 2011 Accomplishments:*** Completed development testing in 3Q FY 2011. Completed Reliability Testing and Procurement decision will be determined by 4Q FY 2011. ***FY 2012 Plans:*** Submit project close-out report during 1Q FY 2012. Share project results to help benefit other projects/programs by 1Q FY 2012. Look for early opportunity to implement Class 1 Engineering Change Proposal (ECP), processor and memory stack combination into ARC-210 Gen 5 production.			
Title: Personnel Transport Module (PTM) for Landing Craft Air Cushion (Navy) ***Description:*** Tests 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 severe deficiencies of the current design, which includes reduced assembly time and improved ventilation to increase habitability and usage, and delivery of a PTM that provides increased durability and reduced maintenance and life cycle costs. ***FY 2011 Accomplishments:*** Completed successful fire, smoke & toxicity (FST) testing for vendor WebCore in 2Q FY 2011. Conducted FST testing for vendor Triton Systems in 2Q FY 2011. Received Technical Warrant Holder (TWH) FST testing approval to proceed with re-test of vendor Triton Systems in 3Q FY 2011. Conducted FST testing for vendor Triton Systems 4Q FY 2011. Final Design Review/Factory Testing occurred 4Q FY 2011. ***FY 2012 Plans:*** Receive PTM test article from WebCore during 1Q FY 2012. Receive TWH testing approval of improved design for vendor Triton Systems during 1Q FY 2012. Conduct FST testing for vendor Triton Systems in 2Q FY 2012. Final Design Review/Factory Testing of test article from vendor Triton Systems in 3Q FY 2012. Receive PTM test article from vendor Triton and complete operational tests for both vendors during 4Q FY 2012. Initiate procurement decision and project close-out report during 4Q FY 2012.	1.000	-	-
Title: Pyrophoric Decoy Second Source (Navy) ***Description:*** Pyrophoric Decoy Second Source tests a second source for Military Jamming Unit (MJU-49/B) and (MJU-64/B) pyrophoric decoys. Currently, only one source for the flare material exists; however, 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	1.000	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 Accomplishments:*** Contracted for developmental test articles during 3Q FY 2011. Completed function evaluation of 3 groups of developmental test articles in 4Q FY 2011. Held preliminary design review during 4Q FY 2011. ***FY 2012 Plans:*** Conduct flight function test during 1Q FY 2012. Commence development tests in 2Q FY 2012. Initiate qualification tests during 3Q FY 2012. Procurement decision and complete project close-out report by the end 4Q FY 2012.			
Title: Shipboard Antenna Radar (Navy) ***Description:*** Shipboard Antenna Radar tests 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. This antenna would replace the current Antenna Shipboard (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 Accomplishments:*** Prepared contract documentation for test articles contract during 3Q - 4Q FY 2011. ***FY 2012 Plans:*** Conduct acceptance test and documentation in 2Q FY 2012. Conduct environmental qualification testing in 2Q – 3Q FY 2012. Procurement decision and complete project closeout report during 4Q FY 2012.	1.000	-	-
Title: Soldier Power Manager (Army) ***Description:*** Soldier Power Manager (SPM) is a small "Power Universalizers" that allows soldiers to charge any military rechargeable battery from a variety of sources, and then power the entire kit from that single battery. SPM drastically reduces the number and variety of primary batteries needed. This project significantly provides field testing of the SPMs, already in lab and limited field trials. ***FY 2011 Accomplishments:*** Awarded contract in 4Q FY 2011, and delivered test articles. ***FY 2012 Plans:*** Vendor will begin functional performance testing of SPMs at their facility. Communications-Electronics research, Development and Engineering Center (CERDEC) will begin laboratory functional performance testing of three SPM units at their facility at	0.800	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Aberdeen Proving Ground. They will also support soldier evaluation of SPM units at the Army Expeditionary Warrior Experiment (AEWE) in Fort Benning and support soldier evaluation of SPM units at the Joint Readiness Training Center (JTRC) in Fort Polk.			
Title: Special Operations Forces (SOF) Forward Trauma Management Set (FTMS) (USSOCOM) ***Description:*** Evaluate rapidly deployable Medical Emergency Response Facility (MERF) modular equipment used to stabilize and sustain casualties with life saving trauma care for SOF operating in remote areas where casualty evacuation (CASEVAC) to a Level II or III medical facility is not available. The MERF subsystems are modular, resuscitative surgical intervention that is operationally adaptable vice operationally specific. The primary outputs and efficiencies to be demonstrated in the project are 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 and to avoid Research, Development, Testing, and Evaluation (RDT&E), procurement, and operations and support costs worth $76.660 million. ***FY 2011 Accomplishments:*** Received long lead test articles during 1Q FY 2011. Completed the airworthiness testing of selected components, and conducted in-theater combat evaluation of FTMS items in Afghanistan through 2Q FY 2011. Received Food and Drug Administration (FDA) approval of required items in 2Q FY 2011. Updated Special Ops Surgical Team tactics, techniques, and procedures, as well as establish inventory controls of FTMS equipment in 4Q FY 2011. ***FY 2012 Plans:*** Complete military user assessment through 1Q FY 2012. Conduct the final airworthiness testing on FTMS components in 1Q FY 2012. Complete final test reports and closeout report by the end of 2Q FY 2012.	0.500	-	-
Title: Tactical Vehicle Battery – Replacement (TVB-R) (Navy) ***Description:*** Tactical Vehicle Battery tests 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 2011 Accomplishments:*** Completed test planning during 2Q FY 2011. Received Phase I test articles from one of the two vendors during 3Q FY 2011. Conducted Phase I comparative testing in 3Q FY 2011. ***FY 2012 Plans:*** Receive the Phase I test articles from the second vendor at the middle of 1Q FY 2012. Complete Phase I Comparative Testing near the end of 1Q FY 2012. Complete data analysis and evaluation down select of the Phase I test articles at the end of 1Q FY 2012. Exercise the Contract Option for Phase II test articles at the beginning of 2Q FY 2012. Receive Phase II test articles at the	0.700	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
end of 2Q FY 2012. Initiate and complete Phase II Performance Testing during 3Q FY 2012. Initiate and complete Phase II Field User Evaluation during 4Q FY 2012. ***FY 2013 Plans:*** Finalize technical test report, await procurement decision, and submit project closeout report by the end of 1Q FY 2013.			
Title: Thermal Fire Control for the Multi-role Anti-armor Anti-personnel Weapon System (MAAWS) (United States Special Operations Command (USSOCOM)) ***Description:*** Validates software upgrades to the Army Navy Nomenclature/Passive (AN/PAS13) Thermal Weapons Sight to provide target acquisition for all current and future 84mm ammunition used in the M3 Carl Gustaf MAAWS. AN/PAS13 fire control system (FCS) for crew served weapons is lightweight, compact, with 3X electronic zoom, and contains programmable reticules and thermal imaging technology. The primary outputs and efficiencies to be demonstrated in the project are an increase in battlefield lethality during day/night, in smoke and fog environmental conditions; while avoiding Research, Development, Test, and Evaluation (RDT&E), manufacturing, production, and operations and support costs worth approximately $36.000 million. ***FY 2011 Accomplishments:*** Modified current AN/PAS13 contract, and initiated FCS mounting bracket development in 3Q FY 2011. Original equipment manufacture conducted internal research and development, and vendor completed internal software integration testing through 4Q FY 2011. ***FY 2012 Plans:*** Complete mounting bracket development and user test in 1Q FY 2012. Complete contract modification and receive test articles by the end of Q FY 2012. Complete government software qualification testing in 1Q FY 2012. Obtain safety certification, and conduct combined developmental and operational testing during 2Q FY 2012. Publish test reports and submit closeout report by the end of 3Q FY 2012.	0.951	-	-
Title: Worldwide Ruggedized Power Supply (WRPS) (Navy) ***Description:*** WRPS tests 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, and from anywhere in the world. The primary outputs are a power supply that is ruggedized, conversion from VAC and Hz to DC power, and provide output currents of 0 to 60 amps while weighing less than 50 pounds. ***FY 2011 Accomplishments:***	0.900	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Initiated contract preparation at the end of 1Q FY 2011. Received initial DAC funding during 3Q FY 2011. Initiated test planning at the end of 4Q FY 2011. ***FY 2012 Plans:*** Award test article contract at the end of 1Q FY 2012. Fabrication of test articles during 1Q – 2Q FY 2012. Receive test articles at the middle of 2Q FY 2012. Conduct performance testing during 2Q – 3Q FY 2012. Initiate field user evaluation at the end 3Q FY 2012 and complete the effort during 4Q FY 2012. Finalize technical test report, procurement decision, and project closeout Report by the end of 4Q FY 2012.			
Title: Light Weight Tow (LWT) Torpedo Defense System (Navy) ***Description:*** LWT will demonstrate an innovative modular towed countermeasure that provides a torpedo defense capability and is optimized for operations in areas not covered by existing systems. Although primarily intended for the Littoral Combat Ship, LWT enables the installation of a torpedo defense system on any vessel requiring the capability, as its operation requires minimal space, weight, and manning. ***FY 2011 Accomplishments:*** Established contract for purchase of LWT hardware in 3Q FY 2011. Produced LWT system performance specifications sufficient to procure hardware 4Q FY 2011. ***FY 2012 Plans:*** Recieve two LWT systems by the end of 1Q FY 2012. Perform land based test and evaluation, conduct in-water component level testing, and integrate hardware and software 2Q FY 2012. Complete post-test analysis and report generation 3Q FY 2012. Complete project closeout and make procurement decision during 4Q FY 2012.	1.339	-	-
Title: Improved Flash Hider for M2HB .50 Cal Weapons (USSOCOM) ***Description:*** Competitively evaluate improved flash hiders for .50 Caliber machine guns. The improved flash hider would reduce the enemies' ability to detect the weapon, and prevent operator's loss of night vision caused by the muzzle flash. The primary outputs and efficiencies to be demonstrated in the project are to provide a new war fighter capability applicable to current operational environment and to avoid Research, Development, Testing, and Evaluation (RDT&E), procurement, and operations and support costs worth approximately $13.700 million. ***FY 2011 Accomplishments:*** Completed operational/user assessment test and reports through 2Q FY 2011. Obtained production decision, fielding and deployment release in 3Q FY 2011. Completed project closeout report by the end of 4Q FY 2011.	-	-	-
Title: Improved Viper Strike Precision Guided Munitions (PGM) (USSOCOM)	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: Validates a more capable semi-active laser that increases the field of view of Viper Strike PGM to strike fleeing targets. The proposed Alternate Semi-Active Laser (ASAL) has twice the field of view of the current seeker. The primary outputs and efficiencies to be demonstrated in the project are an improved operational attack capability while reducing unit cost and increasing the production rate of the Viper Strike missile; while also avoiding RDT&E, procurement, and operations and support costs worth $106.936 million. ***FY 2011 Accomplishments:*** Received follow-on ASAL Flight Test Articles in 2Q FY 2011, conducted end-to-end system live fire testing at China Lake Test Range in 3Q FY 2011, and fielded ASAL capability to current area of operational responsibility through 4Q FY 2011. ***FY 2012 Plans:*** Conduct flight test of final battle management software for system fielding, and submit closeout report by the end of 2Q FY 2012.			
Title: Tactical Beyond-Line-of-Sight (TBLOS) Communications Extension System (USSOCOM) ***Description:*** Validates a man-portable, TBLOS troposcatter terminal that increases existing range of the tactical network data throughput for 16 Megabytes per second (Mbps) links from 22 kilometers (KM) line-of-sight, to 44 KM, while reducing/eliminating vulnerable relay sights. The primary outputs and efficiencies to be demonstrated in the project are easy setup, lower cost, TBLOS network data throughput and to also avoid Research, Development, Test, and Evaluation (RDT&E), production and operations and support costs worth approximately $13.500 million. ***FY 2011 Accomplishments:*** Performed operational testing/user assessment and reporting through 3Q FY 2011. Obtained a system safety certification in 4Q FY 2011. ***FY 2012 Plans:*** Obtain additional and modified test assets and deploy TBLOS test articles to current operational area for user assessment in 2Q FY 2012. Complete a combat assessment and submit a closeout report by the end of 3Q FY 2012.	-	-	-
Title: FY 2012 Focal Areas and New Starts ***Description:*** Investment decisions are made during the execution years in response to Service/US Special Operations Command (USSOCOM) and other government organizations' (OGO) requirements and as new threats emerge or new opportunities are presented. ***FY 2012 Plans:***	-	24.836	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
In FY 2012, the DAC Program 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 System); 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.			
Accomplishments/Planned Programs Subtotals	22.270	24.836	-

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 Ten. 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

Strategic Objective 4-2D. The title of this objective is "Speed technology transition focused on war-fighting needs" and the metrics for this objective is to transition 30 percent of completing demonstrations program per year. From program inception in 2003 until 2010, the Office of Secretary of Defense has initiated 151 projects; 96 projects have been completed to date; 69 met Service or Agency testing requirements and 49 led to procurements with technology currently in use by our warfighters in Iraq, Afghanistan, or at U.S. training facilities. The FY 2011 DAC will have a transition rate of 80 percent for completed projects, exceeds the objective of 30 percent for demonstration programs (Strategic Objective 4-2D, Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD (AT&L)). FY 2012 we anticipate the majority of our FY 2011 projects to complete successfully and transition to the warfighter.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	7.786	7.009	6.817	-	6.817	6.724	6.410	6.611	6.732	Continuing	Continuing
P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	7.786	7.009	6.817	-	6.817	6.724	6.410	6.611	6.732	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) addresses the need to defend and deter against weapons of mass destruction (WMD) threats and to safeguard personnel; prevent unauthorized access to equipment, installations, material, and documents; and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development throughout DoD for an integrated and systemic RDT&E approach for countering nuclear threats and nuclear and conventional physical security equipment (PSE) technology and systems. The funding has been centralized in this Defense-wide PE since the early 1990s and represents a substantial portion of all DoD PSE RDT&E funding. Priorities for this PE RDT&E efforts are driven by inputs from Quadrennial Defense Review guidance, Combatant Command and Service requirements, analysis reports such as “Protecting the Force: Lessons from Fort Hood, January 2010, the Integrated Unit, Base, and Installation Protection Cost Benefits Analysis, Multi-national Work Plans established through the Nuclear Security Summit process, and DoD Directive 5210.41, Security Policy for Protecting Nuclear Weapons-directed requirements and associated security deviation reports.

Under this integrated approach, funds are used to provide PSE system development and demonstration for the Department in seven capability areas: (1) Detection and Assessment; (2) Access Controls; (3) Installation and Transport Security; (4) Storage and Safeguards; (5) Prevention; (6) Decision Support Systems; and (7) Analytical Support. The projects under the PE become technology insertions into existing programs or advance to being a certified Commercial/Government off-the-shelf product. The PE initiatives are coordinated by the Security Policy Verification Committee and the Physical Security Equipment Action Group. These groups work together to avoid duplication of effort and when applicable ensure systems integration and promote interoperability and sustainability.

This PE can fund travel to support the requirements of this program.

This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	7.973	7.220	7.232	-	7.232
Current President's Budget	7.786	7.009	6.817	-	6.817
Total Adjustments	-0.187	-0.211	-0.415	-	-0.415
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-0.163			
• Economic adjustments	-0.187	-0.048	-0.415	-	-0.415

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P163: *Nuclear and Conventional Physical Security/Countering Nuclear Threats*	7.786	7.009	6.817	-	6.817	6.724	6.410	6.611	6.732	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This Program Element (PE) addresses the need to defend and deter against weapons of mass destruction (WMD) threats and to safeguard personnel; prevent unauthorized access to equipment, installations, material, and documents; and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development throughout DoD for an integrated and systemic RDT&E approach for countering nuclear threats and nuclear and conventional physical security equipment (PSE) technology and systems. The funding has been centralized in this Defense-wide PE since the early 1990s and represents a substantial portion of all DoD PSE RDT&E funding. Priorities for this PE RDT&E efforts are driven by inputs from Quadrennial Defense Review guidance, Combatant Command and Service requirements, analysis reports such as “Protecting the Force: Lessons from Fort Hood, January 2010, the Integrated Unit, Base, and Installation Protection Cost Benefits Analysis, Multi-national Work Plans established through the Nuclear Security Summit process, and DoD Directive 5210.41, Security Policy for Protecting Nuclear Weapons-directed requirements and associated security deviation reports.

Under this integrated approach, funds are used to provide PSE system development and demonstration for the Department in seven capability areas: (1) Detection and Assessment; (2) Access Controls; (3) Installation and Transport Security; (4) Storage and Safeguards; (5) Prevention; (6) Decision Support Systems; and (7) Analytical Support. The projects under the PE become technology insertions into existing programs or advance to being a certified Commercial/Government off-the-shelf product. The PE initiatives are coordinated by the Security Policy Verification Committee and the Physical Security Equipment Action Group. These groups work together to avoid duplication of effort and when applicable ensure systems integration and promote interoperability and sustainability.

This PE can fund travel to support the requirements of this program.

This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Detection and Assessment	2.092	1.169	1.492

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: The ability to detect an adversary and assess their intentions is a basic physical security tenant. This capability area will design equipment to identify and warn of unauthorized access to a specified area or installation as well as equipment related to the notification and identification of explosive threats or hazards. ***FY 2011 Accomplishments:*** • Installed full suite of Diebold Predator Elite with Correlation of Radars for Identify Friend or Foe project. • Used comparative infrared and Raman tests to determine which explosive detection systems performed the best. • Investigated signals generated by target and confusant materials in order to develop protocols to reduce false alarms in explosive detection equipment. ***FY 2012 Plans:*** • Design Long-range imaging sensor to operate with a sonar system to identify divers at significant ranges in the underwater environment. • Design optimal active sonar functionality in ultra-shallow water environments. ***FY 2013 Plans:*** • Transition Long-range imaging sensor to operate with a sonar system to identify divers at significant ranges in the underwater environment to low-rate production. • Transition optimal active sonar functionality in ultra-shallow water environments to low-rate production.			
Title: Access Controls ***Description:*** Controlling access to safeguard personnel and their families and to prevent unauthorized access to critical infrastructure and materials is paramount. This capability area will focus on programs and processes related to the validity and verification of individuals entering or already within, a facility. ***FY 2011 Accomplishments:*** • Completed Defense Installation Access Control Demonstration II. • Conducted independent review of Continuous Vetting for Defense Installation Access Control project. • Completed Biometrics Feasibility Study. • Developed plan for Enterprises Services Architecture for Defense Installation Access Control project. • Completed the Behavioral Analysis Study that addressed the DoD's Independent Review 's report, Protecting the Force: Lessons Learned from Ft Hood. ***FY 2012 Plans:*** • Conduct Behavioral Analysis table top exercise.	0.407	0.386	1.551

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Continue Defense Installation Access Control spiral demonstrations in operational environments. ***FY 2013 Plans:*** • Transition Defense Installation Access Control project from system development and demonstration to procurement activities.			
Title: Installation and Transport Security ***Description:*** Robust installation and transport security are vital to preventing a weapon of mass destruction attack or the unauthorized access to key assets such as nuclear weapons and special nuclear material. This capability area will focus on programs and equipment intended to improve the physical security profile of fixed sites and facilities, as well as critical items while in-transit. ***FY 2011 Accomplishments:*** • Identified detection options and a range of flexible response capabilities, to include the full spectrum of non-lethal to lethal tactical weapon systems, to protect personnel and assets against the terrorist threat in a waterside security environment. • Evaluated persistent surveillance, intrusion detection, explosive detection, entry denial, acoustic hailing, autonomous unmanned systems, chemical, biological, radiological, nuclear, and high-explosive and associated functions. ***FY 2012 Plans:*** • Evaluate detection options and response capabilities, to include the full spectrum of non-lethal to lethal tactical weapon systems, to protect personnel and assets against the terrorist threat in a waterside security environment. • Develop persistent surveillance, intrusion detection, explosive detection, entry denial, acoustic hailing, autonomous unmanned systems, chemical, biological, radiological, nuclear, and high-explosive and associated functions. ***FY 2013 Plans:*** • Proof of concept for detection options and response capabilities previously identified, to include the full spectrum of non-lethal to lethal tactical weapon systems, to protect personnel and assets against the terrorist threat in a waterside security environment. • Proof of concept for persistent surveillance, intrusion detection, explosive detection, entry denial, acoustic hailing, autonomous unmanned systems, chemical, biological, radiological, nuclear, and high-explosive and associated functions.	2.828	1.549	0.167
Title: Storage and Safeguards ***Description:*** Properly securing critical assets to prevent access by unauthorized persons and implementing control measures that ensure access is limited to authorized persons is the foundation of physical security. This capability area will focus on equipment (e.g., locks, doors, etc.) designed to delay or stop unauthorized entry / access to a specified / localized area. ***FY 2011 Accomplishments:***	0.602	1.170	0.351

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Standardized an economical magazine construction that comprehensively satisfies physical security criteria, explosive safety, operational and seismic safety standards. • Developed a Government Services Administration-approved shipboard security solution. ***FY 2012 Plans:*** • Proof of concept for an economical magazine construction that comprehensively satisfies physical security criteria, explosive safety, operational and seismic safety standards. • Proof of concept of a Government Services Administration-approved shipboard security solution. ***FY 2013 Plans:*** • Transition economical magazine construction that comprehensively satisfies physical security criteria, explosive safety, operational and seismic safety standards to low-rate production. • Transition a Government Services Administration-approved shipboard security solution to low-rate production.			
Title: Prevention ***Description:*** The security procedures taken to discourage an adversary from accessing weapons of mass destruction or gaining unauthorized access to critical assets are at the heart of prevention. This capability area will focus on broad spectrum, generic efforts which have the ability to influence multiple areas. ***FY 2012 Plans:*** • Integrate security system components via wireless communications with high security over long ranges, without repeaters. • Plan for the Force Protection Equipment Demonstration IX. ***FY 2013 Plans:*** • Integrate security system components via wireless communications with high security over long ranges, without repeaters.	-	1.470	0.301
Title: Decision Support Systems ***Description:*** Decision support systems serve the management, operations, and planning levels of the DoD physical security enterprise to help to make decisions, which may be rapidly changing and not easily specified in advance. This capability area will focus on command and control equipment and projects related to the creation and enhancement of common operating pictures, and the establishment of common architectures / interface standards. ***FY 2011 Accomplishments:*** • Provided DoD and industry the means to achieve Physical Security Equipment interoperability through standards and interface specifications. ***FY 2012 Plans:***	1.197	0.720	2.012

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Integrate sensors, sensor systems and unmanned systems with automated fusion capabilities to populate available Common Operating Pictures (COP) with in-depth security, surveillance, and response data for fixed and semi-fixed/expeditionary elements. • Provide DoD and industry the means to achieve Physical Security Equipment interoperability through standards and interface specifications. ***FY 2013 Plans:*** • Advance Integration of sensors, sensor systems and unmanned systems with automated fusion capabilities to populate available Common Operating Pictures (COP) with in-depth security, surveillance, and response data for fixed and semi-fixed/expeditionary elements. • Provide DoD and industry the means to achieve Physical Security Equipment interoperability through standards and interface specifications.			
Title: Analytical Support ***Description:*** This capability area will focus on studies related to physical security topics and operational and management efforts related to day-to-day activities of the DoD Physical Security Equipment/Countering Nuclear Threats RDT&E Program. ***FY 2011 Accomplishments:*** • Stood up physical security equipment test and evaluation capability with the Marine Corps set to lead this effort. ***FY 2012 Plans:*** • Conduct test and evaluation efforts for physical security equipment. ***FY 2013 Plans:*** • Conduct test and evaluation efforts for physical security equipment.	0.660	0.545	0.943
Accomplishments/Planned Programs Subtotals	7.786	7.009	6.817

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Integrated Base Defense	Sub Allot	PM-FPS:Ft Belvoir, VA	2.130	1.066	Nov 2011	1.516		-		1.516	0.000	4.712	4.712
Intermodal Security Devices	MIPR	NAVFACESC:Port Hueneme, CA	-	0.243	Dec 2011	0.500		-		0.500	0.000	0.743	0.743
Defense Installation Access Control	Various	Various performers:Various locations	6.000	1.742	Dec 2011	1.500		-		1.500	0.000	9.242	9.242
Identify Friend or Foe	MIPR	Force Protection Branch ESC/ HSS:Hanscom AFB, MA	3.000	0.394	Nov 2011	-		-		-	0.000	3.394	3.394
Countering Nuclear & Biological Threats	Various	Various Performers:Various Locations	0.900	0.864	Mar 2012	0.861		-		0.861	0.000	2.625	2.625
Ordnance Handling Facility	MIPR	SPAWAR Atlantic:Charleston, SC	-	-		0.300		-		0.300	0.000	0.300	0.300
Long Range Threat Identification Sonar	MIPR	TBD:TBD	-	-		0.640		-		0.640	0.000	0.640	0.640
		Subtotal	12.030	4.309		5.317		-		5.317	0.000	21.656	21.656

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Security Equipment Integration Working Group	MIPR	SPAWAR Atlantic:Charleston, SC	-	0.500	Mar 2012	0.500		-		0.500	0.000	1.000	1.000
		Subtotal	-	0.500		0.500		-		0.500	0.000	1.000	1.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Performance Maintainability Kit	MIPR	NAVEOD Tech Div:Indian Head, MD	0.560	0.340		-		-		-	0.000	0.900	0.900
PSE Test and Evaluation	MIPR	Various Performers:Various Locations	0.260	0.610	Mar 2012	1.000		-		1.000	0.000	1.870	1.870
Test & Evaluation of Active Protection Systems	MIPR	SPAWAR Atlantic:Charleston, SC	-	0.750	Mar 2012	-		-		-	0.000	0.750	0.750
Maritime Environment Applicability Testing	MIPR	NAVEOD Tech Division:Indian Head, MD	-	0.500	Mar 2012	-		-		-	0.000	0.500	0.500
		Subtotal	0.820	2.200		1.000		-		1.000	0.000	4.020	4.020

	Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	12.850	7.009		6.817		-		6.817	0.000	26.676	26.676

Remarks

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	232.454	174.830	110.383	-	110.383	138.701	254.740	276.007	335.296	Continuing	Continuing
P165: *Prompt Global Strike*	232.454	-	-	-	-	-	-	-	-	Continuing	Continuing
P164: *Hypersonic Glide Experiment and Concepts Demonstration Support*	-	61.830	49.526	-	49.526	28.282	123.740	150.081	150.081	Continuing	Continuing
P166: *Alternate Re-Entry System/ Warhead Engineering*	-	91.000	42.000	-	42.000	100.400	120.000	120.000	180.815	Continuing	Continuing
P167: *Test Range Development*	-	12.000	11.000	-	11.000	7.000	7.000	4.000	3.200	Continuing	Continuing
P168: *OSD CPCS Studies*	-	10.000	7.857	-	7.857	3.019	4.000	1.926	1.200	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities, with the goal of competitive acquisition beginning in FY 2013 or 2014. Timing will be driven by the outcome of flight events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. As a result of flight tests and supporting activities, there are several boost-glide concepts available in preparation for a competitive acquisition. In FY 2012, funding for 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 2013 Office of Secretary Of Defense					DATE: February 2012
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	239.861	204.824	131.515	-	131.515
Current President's Budget	232.454	174.830	110.383	-	110.383
Total Adjustments	-7.407	-29.994	-21.132	-	-21.132
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.062	-			
• SBIR/STTR Transfer	-6.126	-			
• Defense Efficiency - Report, Studies, Boards, and Commissions	-24.051	-	-	-	-
• Defense Efficiency - Contractor Staff Support	-0.223	-	-	-	-
• Economic Assumptions	-1.219	-	-	-	-
• Other Adjustments	24.274	-29.994	-21.132	-	-21.132

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P165: *Prompt Global Strike*	232.454	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities, with the goal of competitive acquisition beginning in FY 2013 or 2014. Timing will be driven by the outcome of flight events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. As a result of flight tests and supporting activities, there are several boost-glide concepts available in preparation for a competitive acquisition. In FY 2012, funding for 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 2011	FY 2012	FY 2013
Title: Hypersonic Glide Experiments and Concept Demonstration Development/Support	118.954	-	-
Description: This sub-project matures technologies that could lead to a system capable of global reach from Continental United States (CONUS) or forward bases 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 have cross-service and cross-concept applicability and will be developed through close coordination among DoD components. This activity will support both ground and flight tests, and provide all national data to the competitive acquisition program. The objectives of this sub-project are to: - Assess boost-glide technologies in light of ground and flight test events and associated modeling and simulation 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 Assess the feasibility of producing an affordable solution to fill the CPGS capability gap. Continue systems engineering/development of weaponized payload delivery vehicles Continue flight test planning and support Continue KEP warhead and penetrator development for application to range of CPGS concepts			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: - Completed Engineering Review Board activities, analysis, and follow-on wind tunnel tests associated with the first HTV-2 flight experiment (conducted in FY 2010). - Conducted the second HTV-2 flight experiment and established an Engineering Review Board to investigate the flight anomaly. - Finalized the design concept for the CSM Payload Delivery Vehicle including thermal protection materials, guidance systems, mission planning, and command and control. Completed the Payload Delivery Vehicle Delta PDR. - Completed System Readiness Review for the launch vehicle. Qualified 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. - Continued KEP development, testing, and modeling and simulation. Completed warhead initiation and structural tests. Completed system engineering reviews with Holloman AFB for KEP sled test and KEP Delta PDR. - Conducted system engineering for entire CPGS mission configuration, including mission performance assessment, mission assurance, risk management, integration, planning, analysis and cost estimates. - Completed end-to-end systems analysis of the CPGS development plan concept, roadmap, and Industry Request for Information.			
Title: Alternative Re-Entry System/Warhead Engineering and Delivery Vehicle Options/Development	75.000	-	-
Description: This sub-project will test and evaluate alternative booster and delivery vehicle options compatible with both intermediate and long range 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 advanced systems 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 over flight 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. This activity will support both ground and flight tests, and provide all national data to the competitive acquisition program. ***FY 2011 Accomplishments:*** - Demonstrated modeling for flight test design to demonstrate maturity of technologies related to thermal management, precise navigation and control, and in-flight communications. - Applied test range capabilities for AHW flight test. - Completed booster design for unique depressed flight trajectory. - Executed the initial integration phase of the AHW including fabrication, assembly and integration of a single AHW flight vehicle in preparation for the flight test. - Documented the applicability of the proven AHW technologies to a family of CPGS concepts and implementations.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Documented the design of the AHW HGB to support future acquisition activities as required.			
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 2011 Accomplishments:*** - Performed range modifications in preparation for flight tests. - Upgrade of the TP01 launch pad (which has not been maintained). - Built sensors and targets to support flight tests. - Purchased range assets to support flight tests, including ships and aircraft to receive in-flight telemetry data transmitted by the PDV (store and burst mode).	25.500	-	-
Title: OSD CPGS Studies ***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 2011 Accomplishments:*** - Completed the study of strategic policy compliance to include CPGS basing alternatives and measures to avoid misinterpretation of intent; policy compliance, and operational requirements validation. - Conducted studies associated with mission planning systems and battle damage assessment. - Developed and implemented measures of system design performance to evaluate the performance of PDV and booster designs, and basing considerations. - Performed analysis of technology readiness of key aspects of the CPGS designs.	13.000	-	-
Accomplishments/Planned Programs Subtotals	232.454	-	-

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

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 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	280.140	-		-		-		-	Continuing	Continuing	Continuing
Alternative Reentry System/ Warhead Engineering and Delivery Vehicle Options/ Development	Allot	SPACE AND MISSILE DEFENSE CENTER:HUNTSVILLE, AL	122.486	-		-		-		-	Continuing	Continuing	Continuing
Test Range Development	Allot	SPACE AND MISSILE CENTER:LOS ANGELES, CA	50.446	-		-		-		-	Continuing	Continuing	Continuing
OSD CPGS Studies	Allot	OFFICE OF THE SECRETARY OF DEFENSE:WASHINGTON, DC	21.988	-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	475.060	-		-		-		-			

	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	475.060	-		-		-		-			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

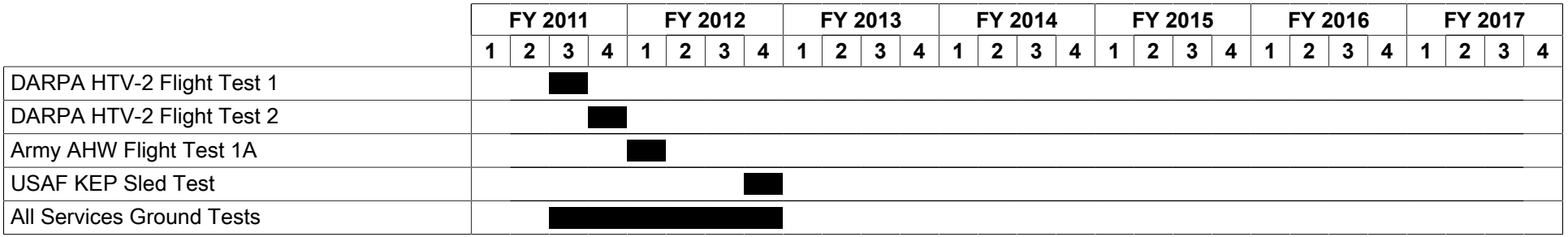

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604165D8Z: *Prompt Global Strike Capability Development*	**PROJECT** P165: *Prompt Global Strike*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
DARPA HTV-2 Flight Test 1	3	2011	3	2011
DARPA HTV-2 Flight Test 2	4	2011	4	2011
Army AHW Flight Test 1A	1	2012	1	2012
USAF KEP Sled Test	4	2012	4	2012
All Services Ground Tests	3	2011	4	2012

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 P164: *Hypersonic Glide Experiment and Concepts Demonstration Support*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P164: *Hypersonic Glide Experiment and Concepts Demonstration Support*	-	61.830	49.526	-	49.526	28.282	123.740	150.081	150.081	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities, with the goal of competitive acquisition beginning in FY 2013 or 2014. Timing will be driven by the outcome of flight events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. As a result of flight tests and supporting activities, there are several boost-glide concepts available in preparation for a competitive acquisition. In FY 2012, funding for 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 2011	FY 2012	FY 2013
Title: Hypersonic Glide Experiments and Concept Demonstration Development/Support	-	61.830	49.526
Description: This sub-project matures technologies that could lead to a system capable of global reach from Continental United States (CONUS) or forward bases 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 have cross-service and cross-concept applicability and will be developed through close coordination among DoD components. This activity will support both ground and flight tests, and provide all national data to the competitive acquisition program. The objectives of this sub-project are to: - Assess boost-glide technologies in light of ground and flight test events and associated modeling and simulation 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 Assess the feasibility of producing an affordable solution to fill the CPGS capability gap. Continue systems engineering/development of weaponized payload delivery vehicles			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 P164: *Hypersonic Glide Experiment and Concepts Demonstration Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Continue flight test planning and support Continue KEP warhead and penetrator development for application to range of CPGS concepts ***FY 2011 Accomplishments:*** N/A ***FY 2012 Plans:*** - Complete the manufacture and accept delivery of aeroshells for KEP sled tests, complete build and conduct KEP sled tests - Participate in HTV-2 and AHW post-flight analyses - Support aero and thermal ground facility tests and future Flight Demo designs - Accept delivery of PDV trade study reports - Prepare and conduct the segment and System CDRs - Conduct post flight test reviews and data analysis, and validate that significant risk reduction was achieved utilizing updated aerodynamic, guidance, and control modeling. - Disseminate post flight data/analysis to CPGS national community, including the AF CSM program office, Army AHW program office, Navy SSP, and OSD/SW DWA Manager. ***FY 2013 Plans:*** - Initiate Program Office stand-up - Complete KEP sled test analysis and continue KEP warhead and penetrator development - Complete HTV-2 aero shell adaption for payload acceptance - Complete PDV alternate flap control system maturation and heat shield materials - Expand systems engineering parameters for performance and cost assessments for all concepts			
Accomplishments/Planned Programs Subtotals	-	61.830	49.526

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 P164: *Hypersonic Glide Experiment and Concepts Demonstration Support*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 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	-	61.830		49.526		-		49.526	Continuing	Continuing	
		Subtotal	-	61.830		49.526		-		49.526			

	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	61.830		49.526		-		49.526			

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 P166: *Alternate Re-Entry System/Warhead Engineering*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P166: *Alternate Re-Entry System/ Warhead Engineering*	-	91.000	42.000	-	42.000	100.400	120.000	120.000	180.815	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities, with the goal of competitive acquisition beginning in FY 2013 or FY 2014. Timing will be driven by the outcome of flight events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. As a result of flight tests and supporting activities, there are several boost-glide concepts available in preparation for a competitive acquisition. In FY 2012, funding for 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 2011	FY 2012	FY 2013
Title: Alternative Re-Entry System/Warhead Engineering and Delivery Vehicle Options/Development	-	91.000	42.000

Description: This sub-project will test and evaluate alternative booster and delivery vehicle options compatible with both intermediate and long range 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 advanced systems 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 over flight 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. This activity will support both ground and flight tests, and provide all national data to the competitive acquisition program.

FY 2011 Accomplishments:
N/A

FY 2012 Plans:
- Complete mission data reporting and analysis from AHW Flight 1; document predicted boost and glide performance, actual performance, range and collection activities, remaining uncertainties, and application of data to modeling for full range of design

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 P166: *Alternate Re-Entry System/Warhead Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
capabilities/missions. Host a post-test Engineering workshop to brief and disseminate post FT-1 test data/analysis to CPGS national community and DWA Manager. - Perform ground testing of possible TPS materials and glide vehicle configurations. - Assess TPS materials; Material Manufacturing Demonstrations to support selected materials. - Initiate alternatives designs and flight procedures with promising TPS materials, NG&C concepts, and glide vehicle concepts. Conduct Integrated Baseline Review and Integrated Master Schedule development for follow-on tests. - Plan System Requirements Review (SRR) and Preliminary Design Review (PDR) as part of the future acquisition program. - Support initial range planning activities for Flight Termination System design and approval. - Conduct KEP warhead and penetrator payload integration trades and designs. ***FY 2013 Plans:*** - Participate in the analysis of FY 2012 ground tests and their application to CPGS modeling advancements. - Initiate work associated with PDV items at risk, in accordance with previous tests. - Mature Flight Control Systems and electronics to be made available to all acquisition program competitors. - Integrate all booster studies to support intermediate range applications. - Expand systems engineering parameters for performance and cost assessments for all concepts. - Mature payload integration studies and make available to all acquisition program competitors.			
Accomplishments/Planned Programs Subtotals	-	91.000	42.000

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 P166: *Alternate Re-Entry System/Warhead Engineering*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Alternative Reentry System/ Warhead Engineering and Delivery Vehicle Options/ Development	Allot	SPACE AND MISSILE DEFENSE CENTER:HUNTSVILLE, AL	-	91.000		42.000		-		42.000	Continuing	Continuing	
		Subtotal	-	91.000		42.000		-		42.000			

	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	91.000		42.000		-		42.000			

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 P167: *Test Range Development*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P167: *Test Range Development*	-	12.000	11.000	-	11.000	7.000	7.000	4.000	3.200	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities, with the goal of competitive acquisition beginning in FY 2013 or FY 2014. Timing will be driven by the outcome of flight events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. As a result of flight tests and supporting activities, there are several boost-glide concepts available in preparation for a competitive acquisition. In FY 2012, funding for 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 2011	FY 2012	FY 2013
Title: Test Range Development	-	12.000	11.000
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 2011 Accomplishments:*** N/A ***FY 2012 Plans:*** - Test-range development for all tests, including adaptation of Life Extension Test Bed (LETB) reentry bodies. - Complete design, assembly and delivery of selected sensors, power/telemetry subsystems; assemble and integrate components to check command/control and verify range safety functions. - Perform range assets to support technology demonstrations, including ships and aircraft to receive in-flight telemetry data transmitted by the PDV. ***FY 2013 Plans:*** - Improve telemetry collection and infrastructure in prep for DOTE/IOTE testing of contractor developed system concepts. - Assist test range infrastructure for long term use			
Accomplishments/Planned Programs Subtotals	-	12.000	11.000

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 P167: *Test Range Development*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 P167: *Test Range Development*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Range Development	Allot	SPACE AND MISSILE CENTER:LOS ANGELES, CA	-	12.000		11.000		-		11.000	Continuing	Continuing	
		Subtotal	-	12.000		11.000		-		11.000			

	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	12.000		11.000		-		11.000			

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 P168: *OSD CPCS Studies*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P168: *OSD CPCS Studies*	-	10.000	7.857	-	7.857	3.019	4.000	1.926	1.200	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with coordination between the Services, Agencies and national research laboratories to pursue integrated portfolio objectives leading to the acquisition and operation of a CPGS system. This program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, guidance systems, and mission planning and enabling capabilities, with the goal of competitive acquisition beginning in FY 2013 or 2014. Timing will be driven by the outcome of flight events and DoD budgets. To support these development activities, the program procures modeling and simulation capabilities, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives. As a result of flight tests and supporting activities, there are several boost-glide concepts available in preparation for a competitive acquisition. In FY 2012, funding for 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 2011	FY 2012	FY 2013
Title: OSD CPGS Studies	-	10.000	7.857
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 2011 Accomplishments: N/A			
FY 2012 Plans: - Perform end-to-end modeling & simulation of CPGS concepts (including alternate CONUS and Sea-Based options) and design of acquisition program strategy (and post acquisition activities). - 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.			
FY 2013 Plans: - Support Program Office(s) efforts toward CDD, requirement refinement for MS A entry, - Booster system integration studies - Warhead fusing studies			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 P168: *OSD CPCS Studies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
- Continue thermal modeling			
Accomplishments/Planned Programs Subtotals	-	10.000	7.857

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 P168: *OSD CPCS Studies*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
OSD CPGS Studies	Allot	OFFICE OF THE SECRETARY OF DEFENSE:WASHINGTON, DC	-	10.000		7.857		-		7.857	Continuing	Continuing	
		Subtotal	-	10.000		7.857		-		7.857			

	Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	10.000		7.857		-		7.857			

Remarks

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	4.049	2.715	-	-	-	-	-	-	-	Continuing	Continuing
609: *Joint Robotics EMD*	4.049	2.715	-	-	-	-	-	-	-	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.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	4.155	2.715	2.564	-	2.564
Current President's Budget	4.049	2.715	-	-	-
Total Adjustments	-0.106	-	-2.564	-	-2.564
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.069	-			
• Economic Assumptions	-0.021	-	-	-	-
• FFRDC	-0.014	-	-	-	-
• Other Adjustments	-0.002	-	-2.564	-	-2.564

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
609: *Joint Robotics EMD*	4.049	2.715	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This Program Element (PE) was established in response to Congressional guidance to consolidate DoD unmanned ground systems and related robotic technologies in order to increase focus of the Services' robotic programs on operational requirements. Technologies in this PE support the continued development of technologies in Budget Activity 3 and 4 (PEs 0603711D8Z and 0603709D8Z) to fulfill Warfighter requirement capability gaps. By exercising its oversight role through a Technology Advisory Board, O-6 Council and Senior Steering Group (Flag level), the Joint Ground Robotics Enterprise 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: Navigation; Perception; Vision/Sensors; Manipulation; Command, Communication & Control; Mission/ Platform Specific; Interoperability; and Outreach & Harmonization. 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 Warfighters' capabilities identified during concept development, operational assessments and theater feedback of current unmanned systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Manipulation	0.375	1.319	-
Description: Incorporation of new or existing technologies to enable a 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.			
FY 2011 Accomplishments: 1) Highly Dexterous Manipulators for Explosive Ordnance Disposal Robots - The purpose of this project is to develop a Highly Dexterous 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 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Dexterous heavy lift hardware and technical documentation package - Feed-forward controls development - Human-machine interfaces phase 1 development and report - End effector interface family technical data package and hardware - Human-machine interface phase II development and report - Operator haptic interface - System integration and testing 2) Advanced Hydraulic Actuation - The purpose of this project is to design and build a technology demonstrator of an advanced hydraulic manipulator suitable for use on a 164 pound AEODRS Tactical class UGV. The intent of the AHA project is to demonstrate the theory that a hydraulic powered manipulator with a high power density, capable of both strength and speed, can be packaged in a way suitable for Tactical class UGVs. - Integration of arm and power unit and corresponding report - Arm operator control unit development and report - Fully integrates arm and power supply and report - Final report ***FY 2012 Plans:*** 1) Highly Dexterous Manipulators for Explosive Ordnance Disposal Robots - Development and complete integration of Haptic feedback - System integration (arm, end effector interface and end effector) and system testing - Dexterous hardware support - 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. ***FY 2013 Plans:*** 1) Projects for this area will be determined by 4Q FY 2012			
Title: Mission/Platform Specific ***Description:*** Development of a technology to address the requirements of a particular mission or to be integrated with a specific platform. ***FY 2011 Accomplishments:***	1.125	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
1) Remote Checkpoint - The purpose of this project is to develop and demonstrate a prototype unmanned ground vehicle (UGV) system with semiautonomous capabilities to support operations at remote security checkpoints. The proposed solution will be a sensor-fused approach to integrate the Talon UGV with Idaho National Lab's robotics intelligence kernel (RIK) Iris recognition and personnel identification and explosives detection. This integrated sensor approach will enable the Talon to semi-autonomously perform several remote checkpoint tasks yet allow operator intervention when needed, especially to employ systems to delay or deny hostile personnel. The project will result in a capstone demonstration as well as a final report. - Finalized and delivered system design drawings - Delivered complete user's manual - Conducted Capstone Demonstration - Delivered final report with results of the overall project as well as the results from the Demonstration 2) Man-Portable ISR Robot - A current challenge for military ground forces is providing sustained intelligence gathering, surveillance, and reconnaissance (ISR) in remote, ungoverned, denied, and/or isolated environments. Highlighting the importance of this high-priority need, the Department of Defense Joint Requirements Oversight Counsel has identified "provide persistent surveillance in ungoverned/denied areas" as the second item on its current list of most pressing military issues. This need is of particular relevance in relation to the IED problem in Iraq, but is also a global requirement to support the War on Terrorism, as well as counter-narcotic and boundary enforcement operations in multiple areas of responsibility. The purpose of this project is to develop and evaluate a prototype unmanned system capable of providing sustained reconnaissance and surveillance in remote and/or denied areas. This project will develop a prototype UGV with enhanced capabilities that specifically support persistent surveillance and reconnaissance applications. It will have a power system to support 72-hour endurance, communication to support long-range operation, an integrated sensor suite, and low light color cameras to perform night surveillance. - Integrated new EMCCD cameras - Integrated new pan and tilt unit - Integrated Velodyne LIDAR - Conducted military user trials 3) Cargo Unmanned Ground Vehicle - The goal of this project is to determine the feasibility of reducing the exposure of Marines to lethal attacks by replacing a portion of the manned vehicles in logistics convoys with unmanned vehicles. Two Medium Tactical Vehicle Replacements (MTVRs) will be autonomized, and a third MTVR will be equipped with an Operator Control Unit (OCU). This project is advancing the current state of robotics through the development of its perception technology (including methods of sensor data fusion and object classification) and methods of GPS-denied navigation. - Completed system build for initial MTVR as a UGV - Completed system build for initial MTVR with Operator Control Unit			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Conducted Limited User Assessment - Conducted Limited Objective Experiment - Initiated system build for second MTVR as UGV ***FY 2012 Plans:*** 1) Cargo Unmanned Ground Vehicle - Finalize system build for second MTVR as UGV - Conduct second Limited User Assessment - Conduct Limited Objective Experiment for Logistics Mission ***FY 2013 Plans:*** 1) Projects for this area will be determined by 4Q FY 2012			
Title: Navigation ***Description:*** Development of reliable motion planning, path planning, obstacle detection/obstacle avoidance, characterization, and decision analysis capabilities based on the perceived environment and specific missions outlined for the robot. ***FY 2011 Accomplishments:*** 1) Autonomous Navigation for Small Unmanned Ground Vehicles - The ANSU program focuses on moving technologies from the laboratory to a realistic operational environment, specifically technologies that will advance the autonomy of small systems in a practical and robust manner. Specific technologies to be addressed include obstacle detection/obstacle avoidance (OD/OA), autonomous navigation, retro-traverse, non-GPS waypoint navigation, guarded tele-operation and other tactical behaviors for small vehicles. - Developed algorithm to stitch successive 3D lidar scans - Developed algorithm for enhanced obstacles detection - Fused stereo vision data with lidar data - Developed algorithm for enhanced obstacle avoidance - Developed and integrate illuminator - Developed algorithm for vegetation classification - Refined control and behavior algorithms - Demonstrated enhanced behaviors 2) Collision Prediction Utilizing Traversability - The purpose of this project is to develop, demonstrate, and deliver two (2) prototype systems to 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 and generate predictions as to the expected path	0.849	0.410	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
of the sense objects of to 10 seconds into the future. This project is advancing the state of robots by developing predictive tools to track objects based on only on object dynamics but also on the environment around the objects. - Algorithm design and created software architecture - Software Development - Algorithm hardening and hardware selection review - Test readiness Review - System Qualification Review - Technology demonstration ***FY 2012 Plans:*** 1) Collision Prediction Utilizing Traversability - Advanced module development and hardware upgrades - Phase 2 validation and tests - Technology demonstration and End User Support ***FY 2013 Plans:*** 1) Projects for this area will be determined by 4Q FY 2012			
Title: Perception ***Description:*** Development of post-processing software technologies (proprioceptive and/or exetroceptive) which will enhance unmanned ground vehicle perception capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions. ***FY 2011 Accomplishments:*** Project will be determined in June FY 2011 ***FY 2012 Plans:*** 1) Long Range Obstacle Detection - Finalize sensor processing algorithm development - Finalize prototype system development - Complete system integration onto UGV platform - Conduct performance verification testing - Conduct final demonstration - Compile/deliver final report ***FY 2013 Plans:***	0.201	0.986	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
1) Projects for this area will be determined by 4Q FY 2012			
Title: Vision/Sensors	1.499	-	-
Description: Development of technologies (hardware and software) which will enhance unmanned ground vehicle sensory (visual, audible and/or tactile) capabilities for navigation, manipulation, and general unmanned ground vehicle situational awareness in a wide range of environments and conditions. ***FY 2011 Accomplishments:*** 1) 3D Visualization for Explosive Ordnance Disposal Robots - Develop, demonstrate, and transition technologies that will provide the EOD UGV operators with an improved situational awareness and visualization capability for manipulation. Provide a high-resolution 3D model of the object of interest and the position of the UGV and manipulator relative to the object in real-time. The 3D model of the object as well as models of the UGV and manipulator will be presented to the operator in a virtual view that accurately reflects the real system. This will allow the operator view the object and the UGV/manipulator from any viewpoint. - Procured the same hardware to replicate original the UNC system - Integrated system onto a Packbot. - Integrated software revisions - Developed 3D Modeling. - Integrate software onto the hardware - Test software on the Packbot MKI - Procured duplicate hardware for local integration and testing with a UGV - Designed a ground truth object that can be used to test the accuracy of the 3D models generated by the UNC pipeline ***FY 2012 Plans:*** 1) Projects for this area will be determined by 1Q FY 2012 ***FY 2013 Plans:*** 1) Projects for this area will be determined by 4Q FY 2012			
Accomplishments/Planned Programs Subtotals	4.049	2.715	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0603709D8Z: *Joint Robotics Program*	9.673	11.129	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0603711D8Z: *Joint Robotics Program/Autonomous Systems*	9.567	9.756	0.000		0.000	0.000	0.000	0.000	0.000	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.
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 2013 Office of Secretary Of Defense		DATE: February 2012
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*

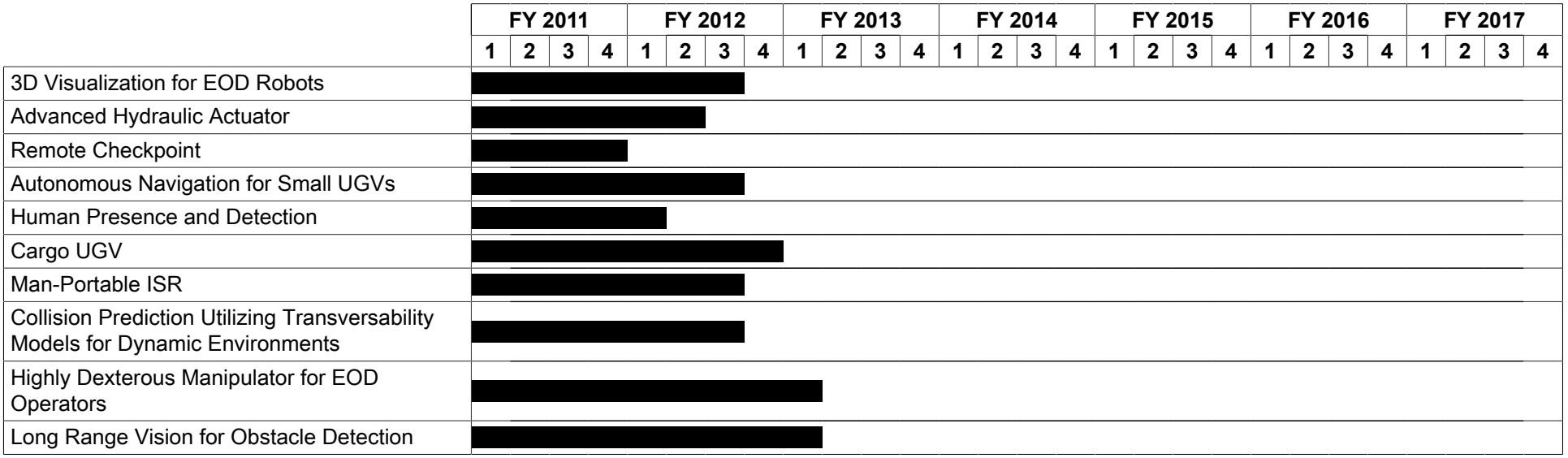

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604709D8Z: *Joint Robotics EMD*	**PROJECT** 609: *Joint Robotics EMD*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
3D Visualization for EOD Robots	1	2011	3	2012
Advanced Hydraulic Actuator	1	2011	2	2012
Remote Checkpoint	1	2011	4	2011
Autonomous Navigation for Small UGVs	1	2011	3	2012
Human Presence and Detection	1	2011	1	2012
Cargo UGV	1	2011	4	2012
Man-Portable ISR	1	2011	3	2012
Collision Prediction Utilizing Transversability Models for Dynamic Environments	1	2011	3	2012
Highly Dexterous Manipulator for EOD Operators	1	2011	1	2013
Long Range Vision for Obstacle Detection	1	2011	1	2013

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	20.253	16.780	20.688	-	20.688	21.250	19.966	17.855	18.280	Continuing	Continuing
771: *Link-16 Tactical Data Link (TDL) Transformation*	20.253	16.780	20.688	-	20.688	21.250	19.966	17.855	18.280	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

As a Department efficiency the ASD(NII) has been disestablished. Starting in FY2013 the funding in ASD(NII) PE 0604771D8Z and PE 0305199D8Z supporting acquisition related functions has been transferred to OUSD(AT&L).

This funding provides resources for acquisition support and management oversight of critical command, control, communications (C3) and non-intelligence space capabilities as the Department continues its transition to netcentric operations. Funds will be used to provide technical, systems engineering and acquisition management oversight of programs, projects and activities to maximize the Department's return on investment in information technology resources and effect a comprehensive approach for assessing and procuring critical information systems from initial design, through development to capability delivery in support of improved weapons systems performance and military operations. Resources will be allocated for architecture design and development, portfolio management, enterprise-wide systems engineering and operational impact analyses related to C3 and non-intelligence space systems. They will also be used to provide expertise required for exercising technical direction over design, performance and cost parameters of key systems and their dependencies. The goal of this funding is to eliminate redundancy, reduce time to the field, evaluate projects and concepts for adherence to net-centric guidelines, minimize performance and operational risk of developing and fielding complex major systems which rely on networks and supporting applications, ensure program dependencies are documented and included in acquisition decisions and address interoperability requirements, gaps and required technical solutions. Typical deliverables associated with the instantiation of net-centric capabilities for these mission areas include network and vulnerability assessments, migration plans, investment strategies and technical and policy guidance directives.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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)*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	20.954	17.395	17.296	-	17.296
Current President's Budget	20.253	16.780	20.688	-	20.688
Total Adjustments	-0.701	-0.615	3.392	-	3.392
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.701	-	-0.252	-	-0.252
• FFRDC Reduction	-	-0.116	-	-	-
• SBIR Reduction	-	-0.440	-	-	-
• STTR Reduction	-	-0.059	-	-	-
• Disestablishment of ASD(NII) Efficiency	-	-	3.644	-	3.644

Change Summary Explanation

FY 2011: Includes Studies Contracts Efficiency – 1.740 million, Service Support Contracts Efficiency -0.531. Program adjustment -0.701 million.
FY 2012: FFRDC Reduction -0.116 million, SBIR Reduction -0.440 million, STTR Reduction -0.059 million.
FY 2013: Previous Presidents budget position was in ASD (NII). The Disestablishment of ASD(NII) Efficiency - Transfers from ASD(NII) acquisition related functions from ASD (NII) PE 0604771D8Z 8.603 million and PE 0305199D8Z Net Centricity 12.337 million, PE 0604771D8Z ownership transfers to AT&L with this new balance, Program adjustment -0.252 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.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Common Joint Tactical Information Initiatives	20.253	16.780	20.688
FY 2011 Accomplishments: – Joint Aerial Layer Network (JALN) Analysis of Alternatives (AoA): A JALN AoA study was performed with Service, COCOMs, JCS, and OSD member participation to look at future alternatives to address aerial communications to augment possible limitations to SATCOM in a representative range of scenarios. The study recommended capabilities in the 2012-2020 timeframe			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
with existing systems in the 2012-2015 timeframe, modified and possibly new systems in the 2015-2020 timeframe, and recommendations for future promising technologies 2020+. – Joint Initiatives: Advanced Tactical Data Link (ATDL) Assessment Updates: reviewed DoD efforts to develop and test an ATDL with greater system throughput and performance in a jammed environment; assessed Service plans to field aircraft and other platforms with an ATDL; assessed 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 assessed Allied participation alternatives for ATDL networks. – Joint TDES migration: Technical assessment, planning and coordination of joint TDL interoperability and transformation including: Continued 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: Created 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: Completed HDRAT analysis. Conducted SATCOM loading Analysis and ISR Effectiveness Analysis; assess cost and performance of Technical Alternatives. Synthesize findings. – Systems Engineering: Used 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. Refined, developed, analyzed future capabilities for advanced waveforms and data links for terrestrials (line-of-sight) and satellite (beyond line-of-sight) systems. This included detailed engineering analysis of technology alternatives and interoperability. – 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. – Joint Interoperability Enhancement Process (IEP): Implemented 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) continued to develop policy-based network management preferred system concept and methodology for enterprise situational awareness – Data Link Migration Engineering Support: 1) Updated 2010 TDES migration plan 2) developed modeling and simulation capability to support data link technical and operational capability assessments including integration to other components of the GIG – GIG Engineering support: Developed 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)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 IA technologies permit rapid, seamless exchange of large ISR data files from tactical edge to GIG and back. – Command and Control (C2) Data and Services Strategy Technical Development and Implementation Analysis: Stood up the Adaptive Planning and Execution (APEX) Technical Integration Team. Determined APEX data requirements and sources.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– C2 Studies and Analysis: Completed the Joint C2 Capability Analysis of Alternatives and gained approval for the Joint C2 Objective Architecture, the Joint C2 Implementation Plan and the Joint C2 Modernization Plan – Strategic Space Environment: Provided analysis in support of decisions affecting DoD and IC space portfolios. – Space Portfolios: Conducted analysis on emerging and existing technologies used for the space protection technology roadmap and investment strategy. – Space Access Technology Roadmap and Investment Strategy: Provided analysis on emerging and existing technologies used to implement the national space access strategy and the development of Space Protection investment strategy on emerging and existing technologies. – Environmental Monitoring Roadmap/Architecture: Continued to develop a “Day without Weather” deliverable focusing on impacts to DoD operations with the loss of environmental monitoring capabilities. – Space Control Architecture Framework: Completed the framework to convey current, mid and far-term space control architectures, trades and investments. – PNT Mission Assurance (MA) Analysis of Alternatives (AoA): Provided analysis, assessments and policy formulation towards the development, acquisition, procurement, deployment/fielding, and operation of all DoD GPS PNT and Navwar systems. – Wideband SATCOM Synchronization: Provided analysis of waveform applications (including High Performance Waveform (HPW), Digital Data Link (DDL), MAINGATE, and 3rd generation Waveforms) and made disposition recommendations; built and maintained approved waveform specification database (SIPR), and applied technical analysis in waveform policy oversight, and develop, coordinate, and maintained Waveform Roadmap. – Bandwidth and Spectrum Requirements: Developed process to evaluate whether proposed programs adequately consider the requirements. – Network Management: Provided technical analysis to include cyber and spectrum issues and develop and network management strategy roadmap and DoD policy. – Wireless Architecture and Advanced Technologies: Conducted analysis, provided communications policy recommendations, applied technical analysis in waveform policy oversight, and developed COMSEC/TRANSEC guidance for spectrum dependent systems. – Common Data Link (CDL) Interference: Conducted analysis for CENTCOM theater; conducted L-band Interference assessment; and developed Spectrum Technology Radar Roadmap. – Strategy Roadmap: Developed roadmap for the integration of spectrum technologies into Spectrum Ten Year Plan. ***FY 2012 Plans:*** – Line of Sight (LOS) Radio Deep Analysis: Systems engineering support for JTRS and WIN-T evaluations, technical risk assessments and recommendations regarding waveform implementations (WNW, SRW, SINCGARS, HNW), and ground force IP routing network architecture. JNAT modeling and simulation to improve tool performance for predicting LOS network performance and assessing impacts of introductions of new technologies (waveform, apertures, routing protocols)			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Cyber warfare: Assess technical and operational risks in cyber warfare acquisitions. Develop DoD acquisition guidance for cyber acquisitions. – Advanced Ground/Air/ Space Development and Assessment: Support SATCOM architecture analysis, planning and assessments to include Resilient Basis for Satellite Communications in Joint Operations AOA, EA4S Architectures, end to end performance assessments of SATCOM systems in scintillated and anti-jam conditions for different military campaigns and scenarios; Requirements, SWAP, platform integration assessments for eXtended Data Rate (XDR) terminals; strategies, system engineering and design approaches for reducing space and terminal costs. – Aerial communications architectures, waveforms, planning: assess efforts to include an assessment of performance in anti-jam Anti-access Area Denial (A2AD) environments; Performance and resilience of aerial networks, and tactical data links for air-sea missions. Program acquisition structure and system engineering approaches for Joint Aerial Layer Network (JALN) programs. Enhance ability to predict performance of network architectures and potential technologies. – ALES M&S tool: Improve tool to capture availability of UAS nodes, UAS body blocking factors, and directional waveforms. – Directional apertures: Assess performance of directional apertures and identify technologies with potential to improve LPI/LPD and AJ performance and achieve affordable unit production costs. Continue effort in understanding communications diversity across ground/air/space, including network architecture – Integrated Master Schedule environment (IMSe) Development & Maintenance: Manage integrated master schedule to analyze portfolio capability delivery schedules, and key dependencies between programs and architectures. Track key acquisition events - IIPT/OIPTs, DAES reviews -- and evaluate the impacts of delays in key milestones, test events, production decisions on capability deliveries. Identify key technology dependencies/opportunities for future capabilities/requirements/cost analyses. – SATCOM Analysis & Optimization: Assess SATCOM programs, define new guidance, and perform cost analysis of ongoing SATCOM programs. Recommend commercial technologies and system architectures for opportunities to significantly reduce cost, simplify designs and improve MILSATCOM capabilities. Recommend commercial space vehicle acquisition practices and business models with potential applicability to improve DoD's acquisition practices. – Enterprise Services to the Tactical Edge: Characterize current general performance (BW, latency, jitter, persistence) of Disadvantaged Intermittent Low bandwidth (DIL) tactical links based on measured Soldier Radio Waveform (SRW) and narrowband SATCOM performance. Identify applications and design approaches to deliver useful application experiences over DIL links. Identify security access and identity management solutions suitable to the tactical environment. Provide reports and case studies to support the creation of acquisition guidance for developing/acquiring applications for the tactical edge environment. – Ground System Networking & Analysis: S upport IIPT/OIPTs, quarterly assessments, dependencies, performance, requirements and cost analysis, for the Joint Tactical Radio System (JTRS) programs; provide performance, schedule, and cost analysis of the Mobile User Objective System (MUOS); evaluate the Army's NET Warrior Program. – DOD Cyber: Develop and enhance methodologies for prioritizing requirements, investments, test procedures and acquisition oversight practices for DoD cyber warfare capabilities; Establish and monitor 933 process for conducting cyber program reviews			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
and assessments; Monitor specific cyber threats directed at portfolio programs and ensure adequate cyber defenses are factored into acquisition strategies, system architectures and CONOPS. – Net Centric Engineering: Define the necessary NC architecture and capabilities definition documents. Update NC Architectures to reflect developments in waveform, enterprise services, information assurance, and knowledge management; Verify proper network performance; Refine Information FSA analysis. – GIG Engineering support: Enhance analytic tools to support technical and performance analysis. Continue to model and simulate various conflict scenarios, showing network performance when transitioning between aerial layer of network and GIG; 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; Conduct additional analysis to validate the development of CDL backbone and IA technologies. – 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. – C2 Data and Services Strategy Technical Development and Implementation Analysis: Establish tracking mechanisms to assess C2 data implementation cost and progress; develop process/metrics to assess value of implementing C2 Core for Joint C2 and APEX; Establish guidance and actionable way ahead to address secure data tagging to support Joint C2 and APEX. Conduct technical – studies and analyses to enable development of policy guidance and refinement of specific approaches for implementing the DoD Net-Centric Data and Services Strategies for DoD C2 capabilities. – Command and Control (C2) Enterprise Transition Framework and Technical Reference Model: Develop a comprehensive data model to support APEX ; Identify and coordinate the tagging and exposure of data to support APEX capabilities. – C2 Studies and Analysis: develop appropriate Plan of Action and Milestones (POA&M) to identify necessary steps to implement recommendations from the Joint C2 Capability Analysis of Alternatives (AoA). That POA&M shall include necessary functional activities, responsible agencies, offices and organizations, timelines for accomplishment, and deliverables. Following completion of the POA&M, ITAC shall assign activities from the POA&M in support of the development of a comprehensive, authoritative Implementation Plan for recommendations from the Joint C2 Capability AoA. – C2 Capability Planning and Implementation Analysis: Develop a plan of action for implementing the Joint C2 AoA recommendations. The plan of action shall address development of a Joint C2 Management and Governance construct; identification of the Joint C2 Family of Programs and development of a Joint C2 Modernization Plan. – DoD C2 Capability Planning (C2 Capability Delivery Increment (CDI)Technical Development and Analysis): Develop C2 Capability metrics and mechanisms. Support the C2 Strategic Plan view of C2 Capability Development Increments (CDIs), conduct technical analysis and develop an interactive data model that converges the currently incompatible data resident in the C2 Registry, Information Support Plans (ISPs), Joint Common Systems Function. Establish Adaptive Planning and Execution (APEX) capabilities-based and technical reference architectures;			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Space Control and C2 Space Portfolio: Provide technical, programmatic, and acquisition oversight for portfolio. Evaluate cost and schedule progress of each program and recommend programmatic changes to increase efficiency. Refine processes under the new acquisition oversight guidelines for space. Develop materials in support of major program milestones and reviews. – Space SATOPS and Operationally Responsive Space (ORS) Enterprise Strategy Development and Analysis: Develop DoD SATOPS & ORS Enterprise Strategies. – Space Access Technology Roadmap and Investment Strategy: Conduct technical analysis on emerging and existing technologies that could be utilized to implement the national space access strategy and develop technology roadmaps and investment strategy. – Environmental Monitoring Roadmap/Architecture: Develop a "Day without Weather" Phase II. Examine the impacts to DoD operations given the loss of different tiers of EM/METOC capabilities or the failure to continue future development in support of evolving warfighting doctrine and capabilities. – DoD Launch Operations Enterprise Strategy Development and Analysis: Develop the DoD Launch Operations Enterprise Strategy. – PNT Mission Assurance (MA) Analysis of Alternatives (AoA): Conduct review of GPS modernization plans and new developments in positioning, navigation and tracking; analyze GPS modernization plan and alternative signals.			
FY 2013 Plans:) Tool Research. Investigate using cyber data to improve prediction of future network performance and behavior. Conduct research into using live network traffic collected as part of cyber situational awareness monitoring in M&S efforts. Determine feasibility of data collection and import process. Evaluate and estimate potential improvements in quality of M&S predicted results. Develop metrics and techniques for better characterizing resilience in DoD networks. – MILSATCOM Planning: Analyze gaps in space segment, ground segment and terminal rollout schedules. Evaluate impacts of crypto modernization requirements Incorporate new technologies assessments into MILSATCOM Planning, Provisioning & Gateway Modernization Roadmap to enable more rapid reprovisioning and geographic centralization of baseband facilities. Analyze Mobile User Objective System (MUOS) SATCOM system technical challenges and provide independent technical review of terminal and end-to-end network performance specifications. Develop architectures and technology insertion plans to support move to IP networking in wideband SATCOM systems. – Aerial Layer Networking Capabilities: Inventory and assess most current industry technology developments in directional and anti-jam aerial advanced tactical data links. Update aerial layer roadmap that addresses JALN AoA recommendations with status and results of RDT&E efforts supporting satellite surrogate connectivity and Anti-jam Anti-Access Aerial Denial (A2AD) communications capabilities. – Line of Sight (LOS) Terrestrial Networks: Produce waveform technology development strategy that incorporates commercial processor update cycles and identifies strategic inflection points where the Department should introduce new waveforms into ground radio systems.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Tactical Common Computing Platform Roadmap: Develop a roadmap that addresses common computing approaches suitable for Disconnected, Intermittent and Long latency (DIL) networking environment. Reduce unnecessary complexity in tactical computing environments. Identify common client frameworks, programming models, storage and computational services that can support C2 and Intelligence application programs in DIL situations. Provide schedules for technology and standards development strategies that produce sufficient technical specificity to be incorporated into acquisition strategies and guidance. – DOD Cyber: Analyze emerging cyber threats in the joint tactical networking space with potential to impede, alter or destroy information being exchanged or stored on connected weapons platforms. Research and identify improvements to modeling and simulation tools to better characterize network impacts from cyber intrusions and attacks. – Joint Command and Control: Develop Joint Command and Control architecture to enable transition of Global Command and Control Family of Systems to support net-centric joint C2 capability. Provide studies and analysis of the Command and Control (C2) Joint Capability Area (JCA) in response to objectives codified in the DoD C2 Strategic Plan and C2 Implementation Plan. Analyze approaches, potential costs and schedules to establish net-centric C2 capabilities. – Adaptive Planning and Execution (APEX): Lead Department effort to manage and integrate APEX acquisition activities. Continue to develop APEX tools, technologies and data roadmap necessary to achieve APEX capabilities. – 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 newly funded air layer programs. – Strategic Space Environment: Continue to provide analysis in support of decisions affecting DoD and IC space portfolios – Space Portfolio: Continue to conduct analysis on emerging and existing technologies used for the space protection technology roadmap and investment strategy – Space Access Technology Roadmap and Investment Strategy: Continue to conduct analysis on emerging and existing technologies used to implement the national space access strategy and the development of Space Protection investment strategy. – Environmental Monitoring Roadmap/Architecture: Continue the development of a “Day without Weather” deliverable focusing on impacts to DoD operations in the event of loss of environmental monitoring capabilities. – PNT Mission Assurance (MA) Analysis of Alternatives (AoA): Continue to provide the analysis, assessments, and policy formulation towards the development, acquisition, procurement, deploy/fielding, and operation of all DoD GPS PNT and Navwar systems.			
Accomplishments/Planned Programs Subtotals	20.253	16.780	20.688

D. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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)*

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

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0605022D8Z: *Defense Exportability Program*							
COST ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	-	1.916	1.859	-	1.859	1.863	1.872	1.870	1.881	Continuing	Continuing
P013: *Defense Exportability Program (DETA)*	-	1.916	1.859	-	1.859	1.863	1.872	1.870	1.881	Continuing	Continuing

A. Mission Description and Budget Item Justification

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.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	1.929	1.951	-	1.951
Current President's Budget	-	1.916	1.859	-	1.859
Total Adjustments	-	-0.013	-0.092	-	-0.092
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-	-0.013	-0.092	-	-0.092

Change Summary Explanation

Internal program adjustment to incorporate exportablility features during research and development of programs.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605022D8Z: *Defense Exportability Program*

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 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605022D8Z: *Defense Exportability Program*	PROJECT P013: *Defense Exportability Program (DETA)*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P013: *Defense Exportability Program (DETA)*	-	1.916	1.859	-	1.859	1.863	1.872	1.870	1.881	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

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 2011	FY 2012	FY 2013
Title: Defense Exportability Program	-	1.916	1.859
FY 2012 Plans: The focus for FY 2012 for the DEF pilot program will be executing feasibility studies for the implementation of DEF for the following seven programs: - Indirect Fires Protection Capability (US Army) - Ground Combat Vehicle (US Army) - Common Infrared Countermeasures (US Army) - Three-Dimensional Expeditionary Long-Range Radar (US Air Force) - Army Integrated Air and Missile Defense (US Army) - Broad Area Maritime Surveillance (US Navy) - Common Joint Proximity Height of Burst Fusing (US Army) Draft and submit the annual report to Congress on the program.			
FY 2013 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605022D8Z: *Defense Exportability Program*	PROJECT P013: *Defense Exportability Program (DETA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
- Review of major defense acquisition programs for exportability as part of the major milestone review process. - Identify Service leads and subject matter experts, to provide support to programs, prior to Milestone B, to develop plans for exportability features. - Implement procedures to require contractors to contribute matching funding for exportability features for those programs receiving support in accordance with FY 2012 National Defense Authorization Act (NDAA). - Management and tracking the completion of the contractor feasibility studies for exportability. - Draft and submit the annual report to Congress on the program.			
Accomplishments/Planned Programs Subtotals	-	1.916	1.859

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 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	8.815	4.846	7.010	-	7.010	5.023	-	-	-	Continuing	Continuing
927: *Next Generation Resource Management System*	4.815	4.846	7.010	-	7.010	5.023	-	-	-	Continuing	Continuing
950: *Learning Management System*	4.000	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

Project 928, Virtual Training Simulation was deleted. The requirement for funding was for FY 2010 only.
Project 950, Learning Management System was added October, 2011 (FY 2011 RDT&E funds).

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).

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	5.000	4.993	4.991	-	4.991
Current President's Budget	8.815	4.846	7.010	-	7.010
Total Adjustments	3.815	-0.147	2.019	-	2.019
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.021	-			
• SBIR/STTR Transfer	-0.139	-0.147			
• Economic Assumptions	-0.025	-	0.019	-	0.019
• Program Increase for Project 0950 - Learning Management System	4.000	-	-	-	-
• Other Adjustments	-	-	2.000	-	2.000

Change Summary Explanation

Project 0927 had reprogrammings of -$0.21, SBIR/STTR transfer of -$0.139, and an economic assumption of +0.018 for total adjustments of -$0.185 in FY 2011. SBIR/STTR transfer of -$0.147 in FY 2012. Economic assumption of +$0.019 and Other Transactions of +$2.000 in FY 2013.

Project 0950 - Learning Management System was added for FY 2011 through reprogramming action.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
927: *Next Generation Resource Management System*	4.815	4.846	7.010	-	7.010	5.023	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

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 various distinct automated systems (Comptroller Information System (CIS), PBD Wizard, Program Resource Collection Process (PRCP), 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). Funded efforts will improve the timeliness of resource management reviews and decisions for senior leaders and Congress.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: Next Generation Resource Management System	4.815	4.846	7.010	-	7.010

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
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 2011 Accomplishments:*** Analysis of the Alternatives (AoA) Revisions - 4Q FY 2011-1Q FY 2012 Acquisition documentation - 4Q FY 2011 IRB revised requirements necessitate revisions to NGRMS AoA. Work to be initiated on acquisition docmentation. ***FY 2012 Plans:*** Conduct Market Investigation 2Q FY 2012-4Q FY 2012 Continue work on Acquisition documentation 1Q FY 2012-4Q FY 2012 Conduct market research 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 2013 Base Plans:*** Finalize market investigation - 1Q FY 2013- 2Q FY 2013 Continue work on Acquisition documentation 1Q FY 2013-4Q FY 2013 Contract Award 3Q FY 2013 for demonstration and preliminary designs Demonstrate prototype systems 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 uality user interface that promotes learning and productivity. ***FY 2013 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	4.815	4.846	7.010	-	7.010

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Analysis of the Alternatives (AoA) Revisions - 4Q FY 2011-1Q FY 2012
Acquisition documentation - 4Q FY 2011 - 4Q FY 2013
Conduct Market Investigation 2Q FY 2012-4Q FY 2012
Finalize market investigation - 1Q FY 2013- 2Q FY 2013
Contract Award 3Q FY 2013 for demonstration and preliminary designs
Select preliminary design: 4Q FY 2013
Verification proposed system and upgrades: 1-4Q FY 2014

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 950: *Learning Management System*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
950: *Learning Management System*	4.000	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Funds will be used to develop a Learning Management System (LMS) that will enable the registration, tracking, validation, audit and reporting required for the Financial Management workforce of 58,000 military and civilian members. This system is critical to the DoD Financial Management Certification Program initiative that consolidates multiple development programs across the Department into a cohesive program to effectively educate, train, and certify financial managers in support of the Civilian Strategic Human Capital Plan. The certification program will provide stronger incentives to personnel to complete key types of training, such as, knowledge necessary to achieve auditability and analytics. This initiative is supported by House and Senate language for the FY 2012 National Defense Authorization Act.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: LEARNING MANAGEMENT SYSTEM	4.000	-	-	-	-
Articles:	1				
FY 2011 Accomplishments: Funds will be obligated in January, 2012.					
Accomplishments/Planned Programs Subtotals	4.000	-	-	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

"Market research" is being conducted to determine whether or not to use an existing system or have a custom system built and what the options are for contracting out. Analysis is being done as to how quickly requirements can be met and the most efficient way of obtaining the desired product.

E. Performance Metrics

Monthly progress reviews (plan/research, select, develop, and launch) towards DoD Financial Management Learning Management System.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	0.956	41.529	25.269	-	25.269	22.672	25.156	21.940	22.328	Continuing	Continuing
0001: *DCMO Policy and Integration*	0.956	41.529	25.269	-	25.269	22.672	25.156	21.940	22.328	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Deputy Chief Management Officer (DCMO), a position created by the National Defense Authorization Act for 2008, 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 Office of the DCMO (ODCMO) was created to integrate business processes and over 2,400 business systems costing approximately $7B / year to acquire, modernize and operate. Following FY 2012 disestablishment of the Business Transformation Agency (BTA), the ODCMO conducts research and development of the Business Enterprise Architecture (BEA) for the Department's Business Mission Area (BMA). The BEA, along with data standards development and war fighter support, provides the foundation for several Departmental priorities to include Financial Auditability and directed efficiencies.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	41.808	43.009	-	43.009
Current President's Budget	0.956	41.529	25.269	-	25.269
Total Adjustments	0.956	-0.279	-17.740	-	-17.740
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Economic Assumptions	-	-	0.296	-	0.296
• Funding Realignment to O&M approriation for Labor	-	-	-14.337	-	-14.337
• Program Adjustment	0.956	-	-0.085	-	-0.085
• Other Adjustments	-	-	-3.614	-	-3.614
• Section 8023(f) FFRDC	-	-0.279	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

Change Summary Explanation

In FY 2012, select organizational missions and functions of the ODCMO and the Business Transformation Agency (BTA) were integrated and consolidated within the ODCMO as directed by the Secretary of Defense. This transfer of select functionality to the Office of the Secretary of Defense (OSD) / ODCMO will provide focused integration and synchronization of business improvement activities in support of the war fighter across all Departmental components.

In FY 2013, the labor adjustment is the result of transfer of labor dollars to the Defense Wide Operations and Maintenance account (O&M), specifically realigning funds in compliance with Financial Management Regulations (FMR) which require expenses of research and development management at headquarters and administrative organizations be funded with O&M; to centralize and consolidate contracting services and realize contracting efficiencies to improve acquisition planning and oversight. And the final adjustment is the ODCMO portion of Secretary of Defense efficiencies initiatives.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Planned Efforts for FY2012	0.956	41.529	25.269
FY 2011 Accomplishments: Development and employment of Integrated Semantic Business Enterprise Architecture (BEA) • Continue to extend the BEA and its supporting development and maintenance tools into the Semantic Web technical domain. Use the BEA to guide and constrain investment in information technology (IT) business systems and inform business process re-engineering/process improvement opportunities.			
FY 2012 Plans: Development and employment of Integrated Semantic Business Enterprise Architecture (BEA) • Continue to extend the BEA and its supporting development and maintenance tools into the Semantic Web technical domain. Use the BEA to guide and constrain investment in information technology (IT) business systems and inform business process re-engineering/process improvement opportunities. End to End (E2E Process) • Refine, improve, re-engineer and represent in the BEA, the end-to-end processes that represent integrated DoD business operations. • The FY12 focus is to begin defining detailed E2E processes for Procure-to-Pay (P2P) and Hire-to-Retire (H2R). Tools Development • Lead the evaluation and oversee development and testing of tools to build, analyze and execute the BEA throughout the Business Mission Area. Enterprise Information Webs (EIWs)			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
• Conducted dedicated research and system engineering to design EIW Proof of Delivery (PODs) pilots to establish the Initial Operational Capability (IOC) of Human Resource Enterprise Information Web (HR EIW) capability. • Mature the integration requirements and maintain fidelity of existing systems to work and to develop new capabilities through PoDs that translate these results to executable Enterprise Transition Plans (ETP). • Continue the development and establish baseline standards for 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. BEA Ontologies/Standards • Through systems engineering and incremental strategy of developing the BEA, Manage Enterprise Data standards to include the standards of the Standard Financial Information Structure (SFIS) and Common Human Resources Information System (CHRIS) to support efficient and interoperable business systems. EIW Acquisition • Provide technical support to Defense Acquisition System/Business Capability Life Cycle (DAS/BCL) and Investment Review Boards (IRBs). • Continue the development and integration to support Acquisition Oversight requirements of Major Automated Information System (MAIS). Acquisition Accountability Office for Afghanistan (AAOA) • Overseeing and guiding establishment of complete visibility of business operations to achieve accountability and build a comprehensive common operating picture (COP) with tracking system traceability for all DoD funds obligated in-theater, electronically capturing DoD approved and funded requirements, obligations, disbursements. Adaptive Logistics Network (ALN) • Guiding establishment of repeatable processes and metrics that operationalize US Africa Command (AFRICOM) logistics strategy by developing a Logistics Clearinghouse and Geographic Information Systems (GIS) Access Tool Proof-of-Concept (Phase I). • Efforts will improve logistics coordination among DoD, US Government Agencies and International Partners and will leverage existing logistics capabilities of the international logistics response community. ***FY 2013 Plans:*** • Continue the evolution of the BEA to be 100% compliant with Semantic Web standards.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
• Evaluate 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. • Complete mapping Procure-to-Pay End-to-End (E2E) process mapping; continue Hire-to-Retire (H2R) process mapping; begin mapping Budget-to-Report (B2R) as directed by the Defense Business Systems Management Committee (DBSMC). • Provide evaluation and test of tools to support the management of core business mission process and data teams to the BEA build team in the construction of End to End processes. • Deploy and baseline the automated Federation and Semantic compliance with the Semantic BEA. • Utilize the IOC of HR EIW capability to serve as the basis for future EIW releases. • Through the Semantic BEA, continue to manage Enterprise Data standards to include the existing standards and new standards such as the PDS, etc. • Establish a robust program for “Equipping the Workforce” to enable the Semantic BEA methods and processes across the Department. This includes the training, tools and services to ensure success. • Develop and deploy services and support for automated BEA and architecture compliance using semantic technologies as the basis for compliance. • Expand the role of the Semantic BEA to begin to serve a central role in the ODCMO and DoD Enterprise and Federal reporting. • Develop, coordinate and promulgate policies in support of DoD business operations which will uniformly ensure efficiency and consistency in business operations. • Use the BEA to guide and constrain investment in IT business systems to maintain fidelity of existing systems to work and to develop new capabilities through PoDs that translate these results to executable ETP. • Coordinate coupling between BEA and ETP business systems' development and deployment milestones. • Provide resources and tools to update milestone, measure guidance, related templates and workbooks to be included in the ETP and reports to Congress. • Enable innovation through the utilization of technology to support more and better business operations for the Department. Innovations will support the full spectrum of operations to include people, processes and technology. Be the technology strategic thought leadership for the DCMO. These efforts include the articulation of business strategy, metrics and the outreach to business stakeholders and civilian and commercial thought leaders. • Collaborate with DoD CIO for DoD Architecture Framework (DoDAF) implementation methods and standards, IT Consolidation and required DoD IT infrastructure to support business operations. • Provide input to analyze progress against business system milestones and document analysis in the Congressional Report on Defense Business Operations. • Encourage the evolution of architecture and data standards in support of DoD requirements through international Standards bodies such as World Wide Web Consortium (W3C) and Object Management Group (OMG).			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
• Support the DoD/Veterans Affairs (VA) Joint Program Office for iEHR for BPR and architecture development and the use of technical standards. • Integrate Enterprise Resource Planning tools with evolving BEA Semantic vision. • Assess and respond to DoD Component CIO Evaluation Scorecard. • Provide input to support Acquisition Oversight requirements of MAIS. • Collaborates with the Federal CTO and CIO in support of Federal Reporting and Performance Initiatives. • Support IT Business Acquisition Oversight by providing technical standards and real time support to Infrastructure IRBs. AAOA and ALN • Focus areas for AAOA and ALN will be a continuation of identifying business process gaps and supporting the institutionalization of process improvements. Key activities would include oversight in capturing lessons learned and supporting Joint Staff, Services and OSD offices in developing new processes, policies and other pertinent Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities (DOTMLPF) issues.			
Accomplishments/Planned Programs Subtotals	0.956	41.529	25.269

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

• "Percent of Enterprise-level Information Technology software and hardware deployed as business services within 18 months of the capability business cases approval." Approximately 88% of the funds devoted to achieve this metric in FY 2012 / FY 2013 (70% / 80%, respectively, of software / hardware deployed) are performed with R&D funds.
• "Number of Major Automated Information System (MAIS) 'significant' breaches (equal to or greater than 15% of Acquisition Program Baseline total cost or within schedule slippages greater than six months." 100% of funds devoted in achieving this metric in FY 2012 / FY 2013 (less than or equal to 1 in both years) are R&D.
• "Number of Major Automated Information System (MAIS) 'critical' breaches (equal to or greater than 25% of Acquisition Program Baseline total cost or within schedule slippages of one year or more." 100% of funds devoted in achieving this metric in FY 2012 / FY 2013 (less than or equal to 2 in both years) are R&D.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	33.627	-	-	-	-	-	-	-	-	Continuing	Continuing
Trusted Foundry: *P014*	33.627	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

The Trusted Foundry PE 0605140D8Z transfered 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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	35.512	-	-	-	-
Current President's Budget	33.627	-	-	-	-
Total Adjustments	-1.885	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.623	-			
• SBIR/STTR Transfer	-0.942	-			
• Economic Assumptions	-0.180	-	-	-	-
• FFRDC	-0.130	-	-	-	-
• Other Program Adjustments	-0.010	-	-	-	-

Change Summary Explanation

The Trusted Foundry PE 0605140D8Z transfered to the Defense Logistics Agency in FY 2012.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Trusted Foundry: *P014*	33.627	-	-	-	-	-	-	-	-	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 2011	FY 2012	FY 2013
Title: Trusted Foundry	33.627	-	-
FY 2011 Accomplishments: Established a cadre of trusted suppliers for the critical trusted components and services needed for appropriate Defense systems. This included design, fabrication, aggregation, packaging and testing. Enhanced Trusted Foundry products to include key specialty processes requested by DoD programs, such as high voltage, extreme environments, and embedded non-volatile memory. For example the high performance silicon germanium bipolar/CMOS technology ("9HP"). Completed 26 CMOS and BICMOS runs for DoD programs, delivering thousands of individual dye.			
Accomplishments/Planned Programs Subtotals	33.627	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 2013 Office of Secretary Of Defense		DATE: February 2012
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*

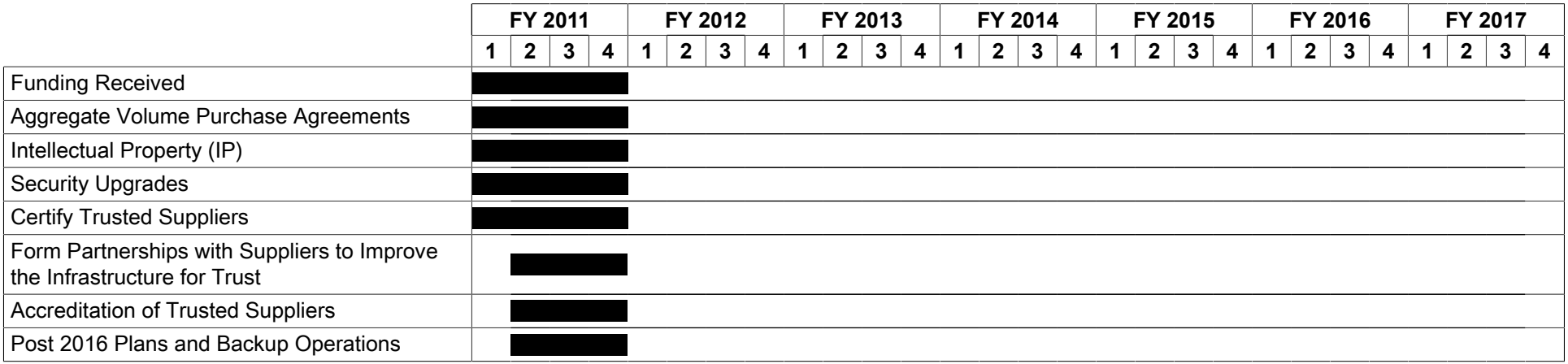

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605140D8Z: *Trusted Foundry*	**PROJECT** Trusted Foundry: *P014*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Funding Received	1	2011	4	2011
Aggregate Volume Purchase Agreements	1	2011	4	2011
Intellectual Property (IP)	1	2011	4	2011
Security Upgrades	1	2011	4	2011
Certify Trusted Suppliers	1	2011	4	2011
Form Partnerships with Suppliers to Improve the Infrastructure for Trust	2	2011	4	2011
Accreditation of Trusted Suppliers	2	2011	4	2011
Post 2016 Plans and Backup Operations	2	2011	4	2011

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	11.561	14.412	10.238	-	10.238	9.196	9.618	9.899	9.899	Continuing	Continuing
P*021: *Defense-Wide Electronic Procurement Capabilities-Contingency*	11.561	9.765	10.238	-	10.238	9.196	9.618	9.899	9.899	Continuing	Continuing
P*022: *SPOT -ES Contingency*	-	4.647	-	-	-	-	-	-	-	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	-	13.322	-	13.322
Current President's Budget	11.561	14.412	10.238	-	10.238
Total Adjustments	11.561	14.412	-3.084	-	-3.084
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense-wide Electronic Procurement Capabilities	11.561	10.500	-	-	-
• Special Applications for Contingencies	-	5.000	-	-	-
• Defense Efficiencies - Reports, Studies, Borads and Commissions	-	-0.389	-	-	-
• Economic Assumptions	-	-0.022	-	-	-
• Other Program Adjustments	-	-0.677	-3.084	-	-3.084

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P*021: *Defense-Wide Electronic Procurement Capabilities- Contingency*	11.561	9.765	10.238	-	10.238	9.196	9.618	9.899	9.899	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 2011	FY 2012	FY 2013
Title: Defense-Wide Electronic Procurement Capabilities- Contingency	11.561	9.765	10.238
FY 2011 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.			
FY 2013 Plans: Continued 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 and to implement initiatives/tools in theater.			
Accomplishments/Planned Programs Subtotals	11.561	9.765	10.238

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P*022: *SPOT -ES Contingency*	-	4.647	-	-	-	-	-	-	-	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 overseas contingency operations (OCO), humanitarian assistance and disaster relief efforts both domestic and abroad.

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 2011	FY 2012	FY 2013
Title: SPOT-ES Contingency	-	4.647	-
FY 2011 Accomplishments: N/A			
FY 2012 Plans: Continue logistics support in accordance with the warfighter's requirements - the right materiel delivered when and where needed to integrate Operational Contractor Support (OCS) into the planning process. Achieve full accountability and visibility of contractors supporting contingency operations - account for and track all contractor personnel during their full in-theater term of service. Continue development of solutions to user-identified capability gaps; implement an N-tier database solution allowing a quicker data processing response time; Implement improved user interface for SPOT-ES that reduces required page views; Continue development and demonstration of a cross-domain solution for SPOT NIPR/SIPR; Continue implementation of biometrics integration with SPOT-ES; deliver enhanced user interface and key integrations with contract identity systems.			
FY 2013 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
The SPOT program was transferred from OSD to DHRA/DMDC beginning in FY 2013.			
Accomplishments/Planned Programs Subtotals	-	4.647	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The SPOT Program Management Office plans to award A competitive contract in FY 2012. The Execution Approach is comprised of product development efforts including biometrics implementation; software update release; focus on user interface and integration with contract/identity systems; hosting SPOT for (NIPR and SIPR). Program costs include Program Management Government labor; Program Management technical and acquisition support; and test & evaluation support.

E. Performance Metrics

There are a several metrics in-place to monitor the performance of the SPOT-ES system. A comparison between JAMMS scans by individuals and those same individuals registered in SPOT provides a compliance metric. Feedback surveys are used to determine customer satisfaction and user interface issues. Helpdesk metrics are used to determine and usability issues.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0305304D8Z: *DoD Enterprise Energy Information Management (EEIM)*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	-	-	3.556	-	3.556	3.356	3.155	2.953	3.055	Continuing	Continuing
304: *Enterprise Energy Information Management*	-	-	1.956	-	1.956	1.956	1.955	1.953	1.955	Continuing	Continuing
305: *Real Property Accountability*	-	-	1.600	-	1.600	1.400	1.200	1.000	1.100	Continuing	Continuing

Note

New Start FY2013

A. Mission Description and Budget Item Justification

A key part of DoD's strategy to meet its energy goals is to develop an energy information management environment that will enable the Services and OSD to track energy production and usage across the real property portfolio. Information on energy usage is critical for day-to-day management and accountability, troubleshooting building systems, and planning for capital investments. These funds will support the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems. AT&L has already conducted a comprehensive requirements analysis for this prospective warehouse using funds provided through the now-disestablished Business Transformation Agency. We have defined a standard set of energy information management requirements and are now assessing and planning which information management technologies (future and current) will best support them. Funding is required to keep this project on track and ensure that the DoD-wide energy management data environment becomes a reality.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	-	3.556	-	3.556
Current President's Budget	-	-	3.556	-	3.556
Total Adjustments	-	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0305304D8Z: *DoD Enterprise Energy Information Management (EEIM)*	PROJECT 304: *Enterprise Energy Information Management*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
304: *Enterprise Energy Information Management*	-	-	1.956	-	1.956	1.956	1.955	1.953	1.955	Continuing	Continuing
Quantity of RDT&E Articles											

Note

New Start FY2013

A. Mission Description and Budget Item Justification

A key part of DoD's strategy to meet its energy goals is to develop an energy information management environment that will enable the Services and OSD to track energy production and usage across the real property portfolio. Information on energy usage is critical for day-to-day management and accountability, troubleshooting building systems, and planning for capital investments. These funds will support the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems. AT&L has already conducted a comprehensive requirements analysis for this prospective warehouse using funds provided through the now-disestablished Business Transformation Agency. We have defined a standard set of energy information management requirements and are now assessing and planning which information management technologies (future and current) will best support them. AT&L funding is required to keep this project on track and ensure that the DoD-wide energy management data environment becomes a reality.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Enterprise Energy Information Management	-	-	1.956
FY 2013 Plans: Funds will support the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems.			
Accomplishments/Planned Programs Subtotals	-	-	1.956

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 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0305304D8Z: *DoD Enterprise Energy Information Management (EEIM)*	PROJECT 305: *Real Property Accountability*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
305: *Real Property Accountability*	-	-	1.600	-	1.600	1.400	1.200	1.000	1.100	Continuing	Continuing
Quantity of RDT&E Articles											

Note

New FY 2013 Start

A. Mission Description and Budget Item Justification

The Real Property inventory fulfills requirements of Execuitve Order for DOD to be audit ready by 2017. New policies are in place, but business systems msut be modified to support data requirements. Without funding the components will return to services agency centric processes that do not allow for total DOD accountability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Real Property Accountability	-	-	1.600
FY 2013 Plans: Funds will support the development and procurement of an enterprise-wide energy data warehouse that will be integrated with existing and future real property systems.			
Accomplishments/Planned Programs Subtotals	-	-	1.600

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	1.531	-	-	-	-	-	-	-	-	Continuing	Continuing
877: *Wounded, Ill and Injured Program*	1.531	-	-	-	-	-	-	-	-	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 3Q FY 2010 to selected field locations.

B. Program Change Summary ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	1.590	-	-	-	-
Current President's Budget	1.531	-	-	-	-
Total Adjustments	-0.059	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.045	-			
• Departmental Adjustments	-0.014	-	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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

The Department approved a technical correction that transferred DW, RDTE to DW, Procurement to procure equipment that facilitates interchange of Service member's Verification of Military Education and Training and DD Form 214 data between the DoD and the Departments of Labor and Veterans Affairs.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Care Management, Disability Evaluation, and Transition Systems IM/IT - Wounded, Ill, and Injured	1.531	-	-

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) 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 2011 Accomplishments:

The Federal Voting Assistance Office contracted a study on absentee voting that supports Wounded Warriors, disabled military members, military members,
their dependents and overseas civilian voters. Wounded Warriors reported low electoral participation due to a lack of motivation as they focused on medical issues, a lack of awareness of voting assistance resources available to them, and the need for additional assistance when completing registration forms and absentee ballots. This observation is not surprising as most Wounded Warriors who were interviewed were in the 18-24 year age-group--an age group that has historically exhibited low participation rates.

In its research and analysis, the Federal Voting Assistance Program Office reviewed business processes and procedures, data sources for voter demographics and voting behavior information, and statutory, regulatory, and policy requirements for voting related information with the intent of developing a Federal Voting enterprise architecture to support revisions to the automated Federal Write-In Absentee Ballot (FWAB) and Federal Post Card Application (FPCA) for Wounded Warriors.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
The Federal Voting Assistance Program Office conducted a mock election where Wounded Warriors were observed and interviewed after voting on six commercial electronic voting systems. The goal of this research was to evaluate the usability, accessibility and privacy provided by the electronic voting systems. Wounded Warriors, in general, provided positive feedback regarding their experience in using the electronic voting systems. Some Wounded Warriors reported difficulties related to usability and accessibility issues. This feedback is available to electronic voting system manufactures for future improvements assisting Wounded Warriors and other challenged citizens. ***FY 2012 Plans:*** During the Program Review for Fiscal Years 2011-2015, DoD Transition Assistance Program (TAP) requirements were definitized and documented to reflect senior leadership's strategic intent to meet provisions of 10 USC § 1142, Pre-separation Counseling, with increased emphasis on delivery of services to the Reserve Components. As such, the Department approved a technical correction that transferred DW, RDTE to DW, Procurement to procure equipment that facilitates interchange of Service member's Verification of Military Education and Training and DD Form 214 data between the DoD and the Departments of Labor and Veterans Affairs.			
Accomplishments/Planned Programs Subtotals	1.531	-	-

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0807708D8Z: *Major Equip Procurement*	1.087	5.062	3.405	0.000	3.405	1.942	1.995	1.794	1.829	Continuing	Continuing
• 0902198D8Z: *Operation & Maintenance*	79.412	74.902	75.819	0.000	75.819	75.894	76.513	73.745	74.741	Continuing	Continuing

E. Acquisition Strategy

N/A

F. Performance Metrics

N/A

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	4.938	6.600	6.383	-	6.383	6.393	6.427	6.364	6.450	Continuing	Continuing
774: *Defense Readiness Reporting System (DRRS)*	4.938	6.600	6.383	-	6.383	6.393	6.427	6.364	6.450	Continuing	Continuing

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, 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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)*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	5.113	6.658	6.383	-	6.383
Current President's Budget	4.938	6.600	6.383	-	6.383
Total Adjustments	-0.175	-0.058	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.128	-0.014			
• Other Program Adjustments	-0.047	-0.044	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
774: *Defense Readiness Reporting System (DRRS)*	4.938	6.600	6.383	-	6.383	6.393	6.427	6.364	6.450	Continuing	Continuing
Quantity of RDT&E Articles											

Note

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, 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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*

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 2011	FY 2012	FY 2013
Title: 774 Defense Readiness Reporting System	4.938	6.600	6.383

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 2011 Accomplishments:
- 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 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

FY 2013 Plans:
- Continue Software lifecycle support

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Continue to assist the Services using DRRS to support their Component Cmdrs and the CoCOMS • Continue refinement of data architecture • Data quality improvement • Data latency improvement with the use of Dashboards • Continue development and integration with Interagency readiness and preparedness systems outside DoD. • Expand readiness reporting capability and integration with coalition forces and allies. • Complete the development and fielding of the Global Visibility Tool to support Global Force Management			
Accomplishments/Planned Programs Subtotals	4.938	6.600	6.383

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	7.802	4.570	3.845	-	3.845	4.102	4.354	5.928	6.034	Continuing	Continuing
P875: *Joint Systems Architecture Development*	-	-	-	-	-	-	-	-	-	Continuing	Continuing
P876: *Portfolio Systems Acquisition (PSA)*	7.802	4.570	3.845	-	3.845	4.102	4.354	5.928	6.034	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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	8.052	4.731	3.876	-	3.876
Current President's Budget	7.802	4.570	3.845	-	3.845
Total Adjustments	-0.250	-0.161	-0.031	-	-0.031
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.181	-0.129			
• Defense Efficiency - Report, Studies, Board, and Commissions	-0.577	-	-	-	-
• Defense Efficiency - Contractor Staff Support	-0.446	-	-	-	-
• Defense Efficiency - Baseline Review	-	-	-	-	-
• Economic Assumptions	-0.041	-	-	-	-
• Other Program Adjustments	1.021	-	-0.031	-	-0.031
• FFRDC	-0.026	-0.032	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P875: *Joint Systems Architecture Development*	-	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Funds have been transferred from this Program Element (PE) to the new Systems Engineering PE, in response 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)).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Joint Advanced Concepts Initiatives	-	-	-
FY 2011 Accomplishments: Funds have been transferred from this Program Element (PE) to the new Systems Engineering PE, in response 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 Under Secretary 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	-	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable.

E. Performance Metrics

Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P876: *Portfolio Systems Acquisition (PSA)*	7.802	4.570	3.845	-	3.845	4.102	4.354	5.928	6.034	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 2011	FY 2012	FY 2013
Title: Portfolio Systems Acquisition Initiatives	7.802	4.570	3.845
FY 2011 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 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
-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 2012 Plans: -Conduct assessments of Capability Portfolios for cost savings opportunities. -Participate in an analysis of current and future adequacy of the military aircraft industrial base. -Participate in Unmanned Systems portfolio reviews and the Maritime ISR review. -Provide analytical support to the Unmanned Aircraft Systems Task Force, Airspace Integration IPT, and in reviews of Unmanned Systems program execution. -Perform a study of the solid rocket motor industrial base -Perform a review of the Integrated Air and Missile Defense portfolio -Prepare Counter Weapons of Mass Destruction roadmap and provided technical and analytical support for CWMD System of Systems work -Perform Ground Moving Target Indicator cost-benefit analysis -Conduct system support and analyses of rotary wing aviation programs including Future Vertical Lift. -Assess progress of enhanced DoD fuze enabling technologies. -Maintain the Conventional Munitions Database. -Provide 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. -Coordinate issues related to DoD equities with Global Nuclear Defense throughout the Department and with the interagency. -Articulate 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. -Conduct analyses and support implementation of acquisition reform initiatives (e.g., WSARA, IMPROVE). -Provide analytical support to the Homeland Defense Coordinator function within OUSD(AT&L) -Conduct analyses of warfare areas to reduce duplication and identify opportunities for cost savings.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
-Support development of US/UK Ground Moving Target Indicator (GMTI) collector interoperability. ***FY 2013 Plans:*** -Conduct assessments of Capability Portfolios for cost savings opportunities. -Conduct analyses and support implementation of acquisition efficiencies. -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., 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.			
Accomplishments/Planned Programs Subtotals	7.802	4.570	3.845

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not Applicable

E. Performance Metrics

Not Applicable

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	157.971	156.297	144.109	-	144.109	140.097	141.038	139.435	141.958	Continuing	Continuing
940: *Central Test and Evaluation Investment Program (CTEIP)*	157.971	156.297	144.109	-	144.109	140.097	141.038	139.435	141.958	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),

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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)*

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.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	162.286	140.231	151.521	-	151.521
Current President's Budget	157.971	156.297	144.109	-	144.109
Total Adjustments	-4.315	16.066	-7.412	-	-7.412
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	20.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.837	-2.864			
• Other Program Adjustments	-1.478	-1.070	-9.102	-	-9.102
• Economic Assumption Adjustments	-	-	1.690	-	1.690

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Central Test and Evaluation Investment Program	157.971	156.297	144.109
FY 2011 Accomplishments: JIM Projects: - Completed 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. - 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 requirements development and planning for the Joint Unmanned Aerial Systems (UAS) Mission Environment project to develop a capability for testing UAS in simulated system of systems environments. - Continued requirements development and planning of a Joint Urban Test Capability to provide urban environment test capabilities. - Continued systems development of the Joint Command, Control Communication, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) Interoperability Test and Evaluation Capability project to develop a capability to test increasingly complex multi-discipline data fusion concepts.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
- 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. - Continued 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 ground testing of critical space assets. - Continued systems development for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. - 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 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 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. - Continued concept development and preliminary design of the Subminiature Flight Safety System project to provide a subminiature, low-cost flight termination system with time-space-position information and data link capabilities. - Continued concept development and preliminary design for the Integrated Network Enhanced Telemetry project Block I capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities. - Initiated 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. - Initiated requirements development and planning for the Next Generation Electronic Warfare Environment Generator project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Initiated requirements development and planning for the Advanced Range Tracking and Imaging System project to provide an integrated next generation suite of optical tracking mounts needed to increase performance, reduce costs, and effectively deliver secure reliable optical throughput. - Initiated an analysis of the benefits of developing test capabilities for Autonomous Systems. - Initiated an analysis of tri-service signals library needs to support development of a controlled density open air environment for testing of C4ISR systems. Resource Enhancement Project: - Completed integration and testing for the Battle Command Network Integration and Simulation project. - Completed acceptance testing for the 25K Transportable Target Launcher project. - Completed critical design and initiated long lead parts purchases for the Multi-Spectral Sea and Land Target Simulator project.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
- Completed development of the Operational Command and Control Instrumentation System project. - Completed Verification and Validation for the Submarine Launched Countermeasure Emulator project. - Initiated the development of the MILSATCOM Atmospheric Scintillation Simulator project to simulate and assess nuclear scintillation effects on the Advanced Extremely High Frequency System during operational testing. - Continued the development of the Lightweight Alternative Power Source project. - Continued the development of the Ground Mounted Seeker Simulator project. - Continued the development of the Distributed Timing Instrumentation Environment project. - Initiated Precision Target Signatures-Reflective Performance Mover (PTS-RPM) to develop low cost, radar cross section representative, movable targets in support of Gray Eagle Unmanned Aerial System operational testing. - Initiated Hostile Fire Indicator Site (HFIS) to enhance existing Hostile Fire Indicator test site with key upgrades to fully facilitate HFI testing of warning systems.			
FY 2012 Plans: JIM Projects: - Complete requirements development and planning, and initiate concept development and preliminary design of a Joint Urban Test Capability to provide urban environment test capabilities. - Complete requirements, development, and planning; and initiate concept development and preliminary design 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 requirements development and planning, and initiate concept development and preliminary design of the Joint Unmanned Aerial Systems (UAS) Mission Environment project to develop a capability for testing UAS in simulated system of systems environments. - Complete systems 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 and initiate concept development and preliminary design for the Next Generation Electronic Warfare Environment Generator project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Complete concept development and preliminary design and initiate systems development of the Subminiature Flight Safety System project to provide a subminiature, low-cost flight termination system with time-space-position information and data link capabilities. - Complete concept development and preliminary design and initiate system design for the Integrated Network Enhanced Telemetry project Block I capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities. - Complete an analysis of the benefits of developing test capabilities for Autonomous Systems.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
- Complete an analysis of tri-service signals library needs to support development of a controlled density open air environment for testing of C4ISR systems. - Continue 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. - 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 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 ground 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 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 requirements development and planning for the Advanced Range Tracking and Imaging System project to provide an integrated next generation suite of optical tracking mounts needed to increase performance, reduce costs, and effectively deliver secure reliable optical throughput. - Initiate the C-130 Based Telemetry Instrumentation System project to provide expanded capability and capacity telemetry support for aircraft and missile defense testing in inter-range and broad ocean area test scenarios. Resource Enhancement Project: - Complete system fabrication and begin testing of the Multi-Spectral Sea and Land Target Simulator project. - Complete the development of the Lightweight Alternative Power Source project. - Complete the development of the Ground Mounted Seeker Simulator project. - Complete the development of the Distributed Timing Instrumentation Environment project. - Complete design and development, and begin Defense Threat Reduction Activity certification testing, of the MILSATCOM Atmospheric Scintillation Simulator project. - Continue development of Precision Target Signatures-Reflective Performance Mover (PTS-RPM)to develop low cost, radar cross section representative, movable targets			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
- Continue development of Hostile Fire Indicator Site (HFIS)to enhance existing Hostile Fire Indicator test site with key upgrades to fully facilitate HFI testing of warning systems - Initiate development of Mobile Flight Mission Simulator (mFMS) Advanced Electronic Attack (AEA) to provide realistic electronic attack capabilities into PATRIOT Flight Mission Simulators. ***FY 2013 Plans:*** JIM Projects: - Complete concept development and preliminary design and initiate systems development of a Joint Urban Test Capability to provide urban environment test capabilities. - Complete concept development and preliminary design and initiate systems development 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 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). - Complete 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 ground testing of critical space assets. - Complete concept development and preliminary design and initiate systems development of the Joint Unmanned Aerial Systems (UAS) Mission Environment project to develop a capability for testing UAS in simulated system of systems environments. - Complete concept development and preliminary design and initiate systems development for the Next Generation Electronic Warfare Environment Generator project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Complete systems development of the Subminiature Flight Safety System project to provide a subminiature, low-cost flight termination system with time-space-position information and data link capabilities. - 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 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. - 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.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
- 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 the Advanced Range Tracking and Imaging System project to provide an integrated next generation suite of optical tracking mounts needed to increase performance, reduce costs, and effectively deliver secure reliable optical throughput. - Continue the C-130 Based Telemetry Instrumentation System project to provide expanded capability and capacity telemetry support for aircraft and missile defense testing in inter-range and broad ocean area test scenarios. - Continue 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 Synthetic Battlefield Emitter Systems project to provide a controlled density open air environment for testing of C4ISR systems. Resource Enhancement Project: - Complete development of Precision Target Signatures-Reflective Performance Mover (PTS-RPM) to develop low cost, radar cross section representative, movable targets. - Complete development of Hostile Fire Indicator Site (HFIS) to enhance existing Hostile Fire Indicator test site with key upgrades to fully facilitate HFI testing of warning systems. - Continue development of Mobile Flight Mission Simulator (mFMS) Advanced Electronic Attack (AEA) to provide realistic electronic attack capabilities into PATRIOT Flight Mission Simulators. - 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	157.971	156.297	144.109

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	2.434	2.690	2.419	-	2.419	2.471	2.524	2.574	2.625	Continuing	Continuing
P805: *Assessments & Evaluations*	2.434	2.690	2.419	-	2.419	2.471	2.524	2.574	2.625	Continuing	Continuing
Quantity of RDT&E Articles											

Note

Reduction is the result of efficiency action.

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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	2.500	2.690	2.775	-	2.775
Current President's Budget	2.434	2.690	2.419	-	2.419
Total Adjustments	-0.066	-	-0.356	-	-0.356
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.066	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-	-	-0.356	-	-0.356

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Assessments & Evaluations	2.434	2.690	2.419
FY 2011 Accomplishments: No applicable, Information is Classified.			
FY 2012 Plans: No applicable, Information is Classified.			
FY 2013 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
No applicable, Information is Classified.			
Accomplishments/Planned Programs Subtotals	2.434	2.690	2.419

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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	8.662	7.660	8.214	-	8.214	8.287	8.465	8.822	9.132	Continuing	Continuing
P943: *Thermal Vicar*	8.662	7.660	8.214	-	8.214	8.287	8.465	8.822	9.132	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	8.662	7.660	7.747	-	7.747
Current President's Budget	8.662	7.660	8.214	-	8.214
Total Adjustments	-	-	0.467	-	0.467
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments	-	-	0.467	-	0.467

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Thermal Vicar	8.662	7.660	8.214
Description: Not applicable. Information is Classified.			
FY 2011 Accomplishments: Not applicable. Information is Classified.			
FY 2012 Plans: Not applicable. Information is Classified.			
FY 2013 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0604943D8Z: *Thermal Vicar*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Not applicable. Information is Classified.			
Accomplishments/Planned Programs Subtotals	8.662	7.660	8.214

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 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	9.986	10.218	19.380	-	19.380	19.060	19.332	19.217	19.405	Continuing	Continuing
100: *Joint Mission Environment Test Capability (JMETC)*	9.986	10.218	19.380	-	19.380	19.060	19.332	19.217	19.405	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, standardized data transport solutions, tools and utilities for planning and conducting distributed integrations, DoD corporate distributed testing expertise, 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 acquisition programs 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 and development of interface standards; common software tools and components; and a 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 distributed test support to satisfy 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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	10.287	10.479	10.743	-	10.743
Current President's Budget	9.986	10.218	19.380	-	19.380
Total Adjustments	-0.301	-0.261	8.637	-	8.637
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.208	-0.191			
• Other Program Adjustments	-0.093	-0.070	8.410	-	8.410
• Economic Assumption Adjustments	-	-	0.227	-	0.227

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Joint Mission Environment Test Capability	9.986	10.218	19.380

FY 2011 Accomplishments:

- Conducted over 60 distinct customer distributed live-virtual-constructive (LVC) test activities and support to DoD acquisition programs and events as follows: Broad Area Maritime Surveillance (BAMS) Live-Virtual-Constructive Distributed Event; Joint Integrated Air and Missile Defense Organization's (JIAMDO) Correlation/Decorrelation Interoperability Test (C/DIT)and the Joint Sensor Integration Test Events; Joint Interoperability Test Command (JITC) Joint Interoperability Tests (four actual tests); B1-B Fully Integrated Data Link (FIDL); Air Ground Integrated Layer Exploration (AGILE) Fire III and IV; Joint Track Manager Capability; United Endeavor 11-1 and 11-3; Joint Command, Control, Communications, Computers Interoperability Test and Evaluation Capability (InterTEC) System Integration Test.
- Continued to expand the JMETC persistent connectivity infrastructure from 57 to 66 sites (and an additional 9 are planned) to meet customer requirements; expanded network connectivity to industry (Northrop Grumman Corporation and Boeing Corporation) and successfully peered to the DoD's Joint Information Operations Range.
- Continued distributed test planning support to on-going programs (e.g., F-35, Joint Tactical Radio System Airborne Maritime Fixed (AMF) Small Airborne (SA), Gerald R. Ford Class (CVN-78); Multi-Function Advanced Data Link, Navy Program Executive Office for Integrated Warfare Systems, Joint Integrated Air and Missile Defense Organization, Small Diameter Bomb Increment II, B1-B Lancer, United States Marine Corp's Ground/Air Task Oriented Radar (G/ATOR) etc.).
- Continued conducting a technical watch for both government and commercially available software tools to reinforce the current suite of JMETC standard distributed test support tools.
- Continued coordination with the JMETC Users Group workshop to facilitate development and incorporation of the highest priority improvements to the distributed test software and standard interfaces to meet customer requirements. JMETC conducted 2 Users

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
Group meetings in FY 2011 with an average of 250 participants for all DoD Components. Through the JMETC Users Group, the JMETC program office continued to develop and implement the distributed test tools evaluation for application by the DoD T&E community. - Continued planning for the development of a JMETC wireless range extension to support the need for temporary local site installations. - Continued to lead the coordination and implementation of DoD-wide improvements to the DoD Information Assurance Certification and Accreditation Process (DIACAP) throughout the DoD RDT&E community. Appointed as a non-voting member of the DoD DIACAP Technical Advisory Group (TAG) and created a DIACAP Knowledge Service Forum for the DoD RDT&E community. - Continued upgrade of the JMETC Reuse Repository to provide general program information; provided lessons learned from previous distributed LVC tests; opened access to software interfaces, tools, utilities, and test metadata; provided capabilities of each site on the JMETC infrastructure; provided all help-desk functions; and provided opportunities for collaboration by making all content and tools available to the DoD T&E community for reuse. - Engaged/planned with more than 27 customers (potential and active) 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. - Initiated the the DoD-wide T&E community needs analysis to define joint requirements for improving test data management for the distributed test capability.			
FY 2012 Plans: - Complete the concept implementation of a JMETC wireless range extension to support the need for temporary site installations. - Complete the installation of a networked cross-domain security application at Dahlgren, VA, to expand the JMETC capability to distributed test support that includes coalition participants. - 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 tests), AGILE Fire (2 events), B-1B Fully Integrated Data Link Testing, and BAMS LVC DE. - Continue to provide general distributed test support to customers such as F-35 M&S Interoperability, F-22 Data Link Testing, BAMS, CVN-78, Navy Accelerated Mid-Term Interoperability Improvement Project (AMIIP), Air Force Special Operations Command, and InterTEC development and fielding, Joint Operational Test Assessment (JOTA), Consolidated Afloat Networks and Enterprise Services Program, Ground/Air Task Oriented Radar (G/ATOR) Program, Common Aviation Command and Control System (CAC2S) Program, 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.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
- Continue planning support to on-going acquisition programs, particularly CVN-78, Joint Strike Fighter (JSF), F-22, Joint Tactical Radio System (JTRS), 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 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 distributed test tools evaluation and 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 2013 Plans: - Continue to provide distributed test support for 3-4 major customer events such as Joint Tactical Radio System (JTRS), F-35, F-22, BAMS, CVN-78, InterTEC, and 3-10 smaller test activities, as well as, continuous interconnectivity between distributed test resources for day-to-day exchange of test operations data. Assist 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 JTRS, JIAMDO Projects, F-22, BAMS, CVN-78, JSF. - 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 distributed test tools evaluation and selection process in coordination with the JMETC Users Group and complete plans and resource requirements determinations to sustain the “select” tools. - Continue to expand and sustain the JMETC persistent connectivity infrastructure to meet customer requirements in full consideration of maximizing the potential for reuse.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
- Initiate the plans and coordination to establish and improve the test infrastructure for cyber tests and assessments.			
Accomplishments/Planned Programs Subtotals	9.986	10.218	19.380

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	35.541	33.162	32.266	-	32.266	33.218	33.837	34.346	34.969	Continuing	Continuing
P421: *Technical Studies*	35.541	33.162	32.266	-	32.266	33.218	33.837	34.346	34.969	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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	49.282	34.213	34.220	-	34.220
Current President's Budget	35.541	33.162	32.266	-	32.266
Total Adjustments	-13.741	-1.051	-1.954	-	-1.954
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.131	-			
• SBIR/STTR Transfer	-0.890	-			
• Other undistributed and efficiencies reductions	-12.720	-	-1.954	-	-1.954
• Other Adjustment FY2012	-	-1.051	-	-	-

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 – Reports, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, the budget estimate trend reflects a reduction in the number and cost of reports and studies below the aggregate level reported in previous budget submissions.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P421: *Technical Studies*	35.541	33.162	32.266	-	32.266	33.218	33.837	34.346	34.969	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: Technical Studies and Analyses Support for the Office of the Secretary of Defense	25.842	25.339	24.464	-	24.464
FY 2011 Accomplishments: Technical Support for the USD(Acquisition, Technology & Logistics): Studies and analyses of: Unmanned aerial platforms, counter weapons of mass destruction capabilities, strategic warfare systems, foreign investment in domestic industry, sustainable defense manufacturing, software supply chain assessments, various in-depth assessments of domestic defense industry, coalition MRAP operations, naval force mix planning, air and missile defense capabilities integration, global defense industry trends, protecting the defense industrial-base from cyber security threats, 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					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
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: 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, countering enemy air defenses, 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): 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, allied defense reform efforts, national security policy reviews as required by national and departmental-level guidance, recommendations and analyses regarding military posture, cyberdefense capabilities, improving methodology and technological capabilities for analyses of defense planning scenarios, regional security assessments, impact of cultural factors in international security operations planning, operational assessments of irregular warfare capabilities, risks to space assets, 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:					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Strategies to mitigate the long-term effects of extended and multiple 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 profile planning, preventing sexual assault of new service members, 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, counterintelligence capabilities, intelligence program cost analyses, strategic information operations analyses, nuclear detection capabilities, foreign language specialist requirements, organization and doctrinal planning for intelligence, surveillance, and reconnaissance capabilities Technical Support for the Joint Staff conducting joint research with OSD: Studies and analyses with OSD supporting DoD campaign assessments, expeditionary basing requirements, information assurance, Mexico and Central America strategic policy planning, strategic posturing for Korea stationed forces, and dispersed operations against precision capable opponents					
FY 2012 Plans: Technical Support for the USD(Acquisition, Technology & Logistics): Studies and analyses of: Weapons systems requirements and analyses in allied operations, unmanned naval systems, surface warfare requirements, strategic arms control implications, homeland defense air surveillance, next-generation propulsion technology, better buying power initiatives, reducing inventory and product lead-time, automated identification technologies, performance based logistics, industrial base capabilities, risk management of critical defense component supplies, future technology requirements in defense manufacturing, changes in patterns of defense					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
industry innovation, satellite communications and imagery architecture planning, global defense industry trends, remote sensing technology requirements, strengthening allied cooperative efforts in weapons systems research and development, effects on force capabilities by changes in allied procurement, strategic basing requirements, NATO policy planning, strategic energy infrastructure, operational energy risk, identifying acquisition program risk, support to Defense Science Board task forces on various evolving technological and policy 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: Studies and analyses regarding the following areas: Assessments of force structure and weapons systems performance and cost effectiveness, irregular warfare analyses, 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 strategic and conventional weapons systems configurations and force levels, 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: Ballistic missile defense and international strategic stability, reducing safety risks due to space congestion, security transition strategy in areas of conflict, cyberstrategy issues, DoD policy and national preparedness, future of NATO capabilities, cross-domain deterrence, transnational non-state actors in North and West Africa, identifying and countering emerging risks by terrorist organizations, analyses of counter-proliferation security policies and initiatives, national security policy reviews as required by national and departmental-level guidance, recommendations and analyses regarding military posture, 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:					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Military manpower and compensation, post-deployment employment transitions of reservists, force structure concept planning, modeling future enlisted force profiles, estimating qualified military available population, military sexual assault policy and prevention, health-care personnel requirements, military academy selection criteria, virtual training capability, effects of transfers on military spouse employment, social media security, training software requirements, personnel cycles within the Total Force, reserve component readiness, officer recruiting sources, suicide prevention, preventing and managing prescription drug misuse, and workforce and leadership diversity management Technical Support for the USD(Intelligence): Studies and analyses of: Operations security effectiveness, military intelligence language specialist planning, intelligence training and education, multi-level security of sensor data from multiple networks, NATO information capabilities integration, Foreign Military Sales risk mitigation, potential roles of multi-role unmanned lighter than air vehicles, and electronic warfare spectrum situational awareness and battle management capabilities Technical Support for the Joint Staff conducting joint research with OSD: Studies and analyses with OSD supporting joint logistics and distribution operations, operational airlift requirements, hybrid warfare planning, deterrence policy planning, and joint contingency basing requirements					
FY 2013 Base Plans: Technical Support for the USD(Acquisition, Technology & Logistics): Studies and analyses of: Strengthening peacekeeping and counter-insurgency capabilities of allied states, future naval force mix planning, unmanned systems requirements, strategic warfare requirements, air and missile defense capabilities integration, space systems planning, industrial base capabilities assessments, future technology requirements in defense manufacturing, maintaining competition in the defense industry, global defense industry trends, modeling and simulation requirements, strengthening allied cooperative efforts in weapons systems research and development, policy implications of changes in allied defense capabilities, strategic basing requirements, improving resource efficiency in DoD installations, DoD energy policy in acquisition planning, logistics supply chain requirements, NATO policy planning, treaty compliance requirements, identifying acquisition program					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
risk, support to Defense Science Board task forces on various evolving technological and policy 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: Studies and analyses regarding the following areas: Assessments of force structure and weapons systems performance and cost effectiveness, assessments in support of scenario analyses, technical studies and analyses to support independent cost estimates and economic research, logistic and mobility requirements, comparative analyses of alternative strategic and conventional weapons systems configurations and force levels, 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: Asia-Pacific strategic opportunities and challenges, U.S. – China defense policy engagement, impacts of industrial trends on Eurasian defense modernization, domain awareness strategic planning, Latin American defense policy and strategy planning, DoD Participation in UN Peacekeeping Operations, joint stability operations requirements, planning for Egypt's political future, information operations force structure, 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: Reserve component readiness and sustainability, military compensation policy, improving military applicant screening, supporting military families during extended parental absences, development of the cyberspace operations workforce, improving recruiting strategies and aptitude forecasting, promoting wellness of the force, social media strategies, mitigating insider threats and strengthening personnel assurance, and adaptive training and mobile learning platforms technology planning Technical Support for the USD(Intelligence):					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Studies and analyses of: Professional military language personnel requirements, biometric and forensic intelligence collection and exploitation capabilities, foreign language training capabilities, operational security effectiveness and countermeasures analyses, and improving information sharing between allied and coalition partners Technical Support for the Joint Staff conducting joint research with OSD: Studies and analyses with OSD supporting joint logistics planning, hybrid warfare planning, countering anti-access environments, geopolitical contingency policy planning, and joint contingency basing requirements ***FY 2013 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. ***FY 2011 Accomplishments:*** Program management ($2,967K); requirements management ($200K); software development ($5,006K); systems engineering ($818K); testing ($120K); logistics management ($588K) ***FY 2012 Plans:*** Program management ($1,324K); requirements management ($532K); software development ($1,463K); systems engineering ($2,592K); testing ($449K); logistics management ($1,463K) ***FY 2013 Base Plans:***	9.699	7.823	7.802	-	7.802

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Program management ($1,026K); requirements management ($282K); software development ($2,664K); systems engineering ($2,006K); testing ($450K); logistics management ($1,374K) ***FY 2013 OCO Plans:*** None					
Accomplishments/Planned Programs Subtotals	35.541	33.162	32.266	-	32.266

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

PE 0605104D8Z Technical Studies, Support & Analysis

FY 2013 BA: $32.266 FY 2013 BA Assoc w/Metrics: $32.266M Percent FY 2013 BA Assoc w/Metrics: 100%

This program conducts over one-hundred 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	4.314	1.433	0.840	-	0.840	0.904	0.972	1.648	1.678	Continuing	Continuing
P110: *USD (A&T) Critical Technology Support*	4.314	1.433	0.840	-	0.840	0.904	0.972	1.648	1.678	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) restricted 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 2013 Office of Secretary Of Defense	DATE: February 2012
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*

- Provide technical expertise and analyses in assessing the impact of data lost as a result of the unauthorized access and/or exfiltration.
- 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.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	4.743	1.486	0.863	-	0.863
Current President's Budget	4.314	1.433	0.840	-	0.840
Total Adjustments	-0.429	-0.053	-0.023	-	-0.023
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.300	-			
• SBIR/STTR Transfer	-0.092	-0.043			
• Economic Assumptions	-0.024	-	-	-	-
• FFRDC	-0.012	-0.010	-	-	-
• Other Program Adjustments	-0.001	-	-0.023	-	-0.023

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P110: *USD (A&T) Critical Technology Support*	4.314	1.433	0.840	-	0.840	0.904	0.972	1.648	1.678	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) restricted 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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

Specific activities include:
- Provide technical expertise and analyses in assessing the impact of data lost as a result of the unauthorized access and/or exfiltration.
- 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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Militarily Critical Technologies Program (MCTL)	4.314	1.433	0.840
FY 2011 Accomplishments: (1) Export Control Program: - Conducted limited MCTL annual update and reviews. - Contributed technical evaluation to Defense Logistics Agency (DLA) for the Rare Earth Element Supply Risk Report to Congress, required by the Section 843 of the FY 2011 National Defense Authorization Act (NDAA). - Provided technical evaluation to Defense Technology Security Agency (DTSA) for the Updated Risk Assessment of Proposed Transfer of Export Control Jurisdiction on Commercial Satellites to Congress, required by the Section 1248 FY 2010 NDAA. - Extended technology assessment support to Counter-Intelligence (CI) community by participation with Federal Law Enforcement via the National Counter-Intelligence Working Group (NCIWG); with the CI-Interagency Management Group (IMG) and with the Services via the industrial security working group (ISWG). (2) Damage Assessment Management Office (DAMO) Program: - Finalized damage assessment ontology and plan for a data repository to allow for trend analysis and data discovery.			
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.			
FY 2013 Plans: - Maintain technical interface to export technology security organizations and functions.			
Accomplishments/Planned Programs Subtotals	4.314	1.433	0.840

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	94.649	64.524	56.012	-	56.012	54.659	53.945	48.521	49.514	Continuing	Continuing
411: *Foreign Materiel Acquisition and Exploitation*	94.649	64.524	56.012	-	56.012	54.659	53.945	48.521	49.514	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	95.520	64.524	62.130	-	62.130
Current President's Budget	94.649	64.524	56.012	-	56.012
Total Adjustments	-0.871	-	-6.118	-	-6.118
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department Adjustment	-0.029	-	-6.118	-	-6.118
• Congressional adjustment	-0.842	-	-	-	-

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Foreign Materiel Acquisition and Exploitation	94.649	64.524	56.012
FY 2011 Accomplishments: Mission Support (Details provided in Defense-Wide classified book)			
FY 2012 Plans: Mission Support (Details provided in Defense-Wide classified book)			
FY 2013 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
Mission Support (Details provided in Defense-Wide classified book)			
Accomplishments/Planned Programs Subtotals	94.649	64.524	56.012

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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	102.124	96.401	-	-	-	-	-	-	-	Continuing	Continuing
128: *Classified Program*	102.124	96.401	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Classified

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	102.124	96.401	-	-	-
Total Adjustments	102.124	96.401	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.942	-2.931			
• Other Program Adjustments	-0.395	-0.668	-	-	-
• Congressional Add	106.000	100.000	-	-	-
• Economic Assumptions	-0.539	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)

	FY 2011	FY 2012
Project: 128: *Classified Program*		
Congressional Add: *Classified*	102.124	96.401
Congressional Add Subtotals for Project: 128	102.124	96.401
Congressional Add Totals for all Projects	102.124	96.401

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012
Congressional Add: Classified	102.124	96.401

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012
FY 2011 Accomplishments: Classified Program		
FY 2012 Plans: Classified Program		
Congressional Adds Subtotals	102.124	96.401

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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	26.642	18.674	18.174	-	18.174	18.751	28.954	30.785	31.353	Continuing	Continuing
P130: *FCT*	26.642	18.674	18.174	-	18.174	18.751	28.954	30.785	31.353	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	32.755	19.080	19.204	-	19.204
Current President's Budget	26.642	18.674	18.174	-	18.174
Total Adjustments	-6.113	-0.406	-1.030	-	-1.030
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.500	-			
• SBIR/STTR Transfer	-0.366	-0.279			
• Baseline Adjustments	-	-	-1.030	-	-1.030
• Congressional Reductions	-5.000	-	-	-	-
• Economic Assumptions	-0.141	-	-	-	-
• FFRDC	-0.098	-0.127	-	-	-
• Other Program Adjustments	-0.008	-	-	-	-

Change Summary Explanation

Baseline Adjustment. ASD(R&E) baseline adjustments reflective of DOD priorities and requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P130: *FCT*	26.642	18.674	18.174	-	18.174	18.751	28.954	30.785	31.353	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 United States (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 646 projects; 551 projects have been completed to date. Of the 279 evaluations that met the sponsors' requirements, 231 led to procurements worth approximately $10.950 billion in FY 2011 constant year dollars. With an Office of Secretary of Defense investment of about $1.128 billion, the FCT Program realized an estimated RDT&E cost avoidance of $7.800 billion in FY 2011 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. The result often means the creation of jobs and contributions to local economies throughout the United States. To date, companies across 33 states benefited from FCT projects.

Final selection of FY 2013 FCT new start projects were determined in September 2012.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: 40mm L60 High Explosive Incendiary (HEI) (United States Special Operations Command (USSOCOM))	0.700	-	-
Description: 40mm L60 High Explosive Incendiary (HEI) aims to qualify multiple sources of 40mm L60 HEI ammunition for use. The ammunition is a critical requirement as the current 40mm ammunition inventory is rapidly depleting at current rate of usage. The primary outputs and efficiencies to be demonstrated in the project are to identify one or more qualified sources for 40mm L60 HEI ammunition and avoid potential Research, Development, Test and Evaluation (RDT&E) and manufacturing costs worth approximately $20.500 million.			
FY 2011 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Accepted delivery of test articles (TAs) 1Q FY 2011. Inaccuracies in the pre-WWII tolerance specifications were discovered during government testing that resulted in safety issues with initial TAs, and government engineering effort was initiated to determine correct production specifications in 3Q FY 2011. ***FY 2012 Plans:*** Engineering Red Team (ERT) will finalize adjusted performance specifications in 1Q FY 2012. Original vendors will produce new TAs in accordance with new contracted specifications, and government will conduct pre-qualification ground testing through 2Q FY 2012. ERT will complete air qualification testing, and submit project closeout report 3Q FY 2012.			
Title: A-10 / F-16 Three Dimensional (3D) Audio Integration (Air Force) ***Description:*** Tests and qualifies 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 A-10 and the F-16 do not have active or electronic noise reduction capability. The primary output is a 3D audio input capability that automatically sorts and presents information spatially in real time to the pilot. It increases situational awareness and allows the pilot to respond quicker by reducing pilot and information overload. It will provide noise reduction, which all but eliminates outside engine and other noise clutter. ***FY 2011 Accomplishments:*** Completed all requirements to initiate contract award in 2Q FY 2011 for test articles and 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.	2.200	1.781	-
Title: Airborne Stand-Off Radar (ASTOR) Precision Targeting (PT) (Navy) ***Description:*** Provide the Distributed Common Ground System – Navy (DCGS-N) and Distributed Common Ground System-Marine Corps (DCGS-MC) with a capability to receive near real-time Intelligence, Surveillance, and Reconnaissance (ISR) data, via Common Data Link (CDL) antenna systems, 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 United States (US) forces to leverage coalition ISR assets and reduce mission requirements for US ISR platforms. ***FY 2011 Accomplishments:***	1.600	1.070	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Established contracts with United States and United Kingdom (UK) support teams in 4Q FY 2011. Met with United Kingdom (UK) Ministry of Defense (MoD) and Royal Air Force (RAF) leadership in 4Q FY 2011 to discuss plans for data collection, analysis, sensor model development, and real-time flight testing, scheduled for 2Q FY 2012. Reviewed ASTOR processing and exploitation capabilities with support teams 4Q FY 2011. Coordinated initial plans for flight testing and evaluation and began ISR data analysis with imagery samples to support sensor model development 4Q FY 2011. ***FY 2012 Plans:*** Provide contracts for image processing software conversion and radar target surveys in the UK. Continue to coordinate plans for flight testing and evaluation to commence at the end of 2Q FY 2012 at RAF Waddington, UK. Flight testing and evaluation to be conducted through 3Q FY 2012. Begin targeting validation analysis in 4Q FY 2012. ***FY 2013 Plans:*** Complete flight testing and targeting reliability validation in 1Q FY 2013. Prepare data validation analysis package for 2Q FY 2013. Deploy to DCGS-N and DCGS-MC Programs at the end of 3Q FY 2013. Complete project close-out report by 3Q FY 2013.			
Title: Airborne Tactical Extraction Platform (AirTep) (United States Special Operations Command (USSOCOM)) ***Description:*** Airborne Tactical Extraction Platform (AirTep) validates a helicopter extraction platform that is capable of extracting up to ten people rapidly, simultaneously, from locations where rotorcraft cannot safely land. Current capability is limited to three individuals. The primary outputs and efficiencies to be demonstrated in the project are a more efficient rotary wing extraction system that accommodates up to 3,306 pounds of personnel and equipment and to avoid Research, Development, Testing and Evaluation (RDT&E) costs worth almost $3.000 million. ***FY 2011 Accomplishments:*** Completed safety testing, technical testing, and test reporting. Obtained fielding and deployment release in 1Q FY 2011. ***FY 2012 Plans:*** Complete operational flight testing. Obtain Milestone C decision and closeout report in 2Q FY 2012.	0.300	-	-
Title: Arresting System for F-22 and Joint Strike Fighter (JSF)(Air Force) ***Description:*** Tests a complete dual-disc BC11 braking system, including all associated hardware, software, and required spare consumables. The Headquarters Air Combat Command/A7OI, in 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 Barrier Arresting Kit 12 (BAK 12) aircraft arresting system cannot handle arresting a F-22 through its full range of operational loads. The output will be a computer controlled arresting system that will safely stop an F-22 throughout the F-22's full operational range of stopping speeds without over-stressing the tail hook and airframe. The system is cheaper to maintain and operate, has extensive self-diagnostics, would provide feedback to the airfield tower, and will provide automated recordkeeping.	0.600	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Terminated dead-load testing of BC11 computer-controlled aircraft arresting system at Naval Air Systems (NAVAIR)/Lakehurst Track 5 prior to the completion of the test program due to mechanical and software problems. Product returned to the vendor for fix. ***FY 2012 Plans:*** Continue testing at vendors' expense. Evaluation will be completed by end of 4Q FY 2012.			
Title: Cyber Defense for C4I Networks (CDCN) (Navy) ***Description:*** Provides the United States (US) Navy with an integrated information technology system for Cyber Defense of C4I Networks. The Pacific Fleet has an 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 2011 Accomplishments:*** Conducted operational user testing and assessment during 2Q FY 2011. Provided technical test report during 3Q FY 2011. Submitted final decision packet in 4Q FY 2011. ***FY 2012 Plans:*** Complete project close-out report by end of 1Q FY 2012.	0.850	-	-
Title: Deployable Runway Rubber Removal System (Air Force) ***Description:*** Deployable Runway Rubber Removal System evaluates a system that lifts rubber deposits and paint from airfield pavement surfaces to restore runway friction, and provides a 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 system uses 60 percent less water than the current system and completes rubber removal in half of the time, with half of the manpower. The Ultra-High Pressure (UHP) System can evacuate the runway in the event of an emergency landing, while the current system cannot. The primary output is a deployable, UHP water runway rubber and paint removal system. ***FY 2011 Accomplishments:*** Coordinated with Federal Highway Administration (FHWA) to borrow Dynamic Friction Tester (DF Tester) and Circular Track Meter (CT Meter), accepting delivery on 22 August 2011. These devices were used to measure pavement Mean Profile Depth (MPD) and dynamic coefficients of friction, respectively. Received operational training 08 September 2011 from director of the	0.850	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Crash Safety and Research Center at the Pennsylvania Transportation Institute. Performed rubber removal at Edwards AFB. Performed rubber removal on Runway 22 L at Edwards AFB from 14 thru 22 September 2011. Validating C-130 transportability. ***FY 2012 Plans:*** Obtain Track-jet Air Transportability Test Loading Activity (ATTLA) airlift certification for C-130 transport. Started analysis of pre- and post-cleaning friction data and draft of the final report.			
Title: Digital – Battle Management Application (D-BMA) (Navy) ***Description:*** Digital – Battle Management Application (D-BMA) is an integrated Command and Control application that provides digital mapping and unit position locations output through the Global Command and Control System. The D-BMA provides combat functionality for transmission of digital orders, conducts mission planning, and enhances combat situational awareness and effectiveness. D-BMA provides the United States Marine Corps (USMC) real-time terrain association of tactical data, and supports 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 faster processing with more accuracy. ***FY 2011 Accomplishments:*** Received test articles in 1Q FY 2011. Initiated lab/integration testing at the beginning of 2Q FY 2011 and initiated software accreditation through 2Q FY 2011. Completed lab/integration and initiated technical testing efforts at beginning 3Q FY 2011. Project terminated due to software validation issues.	1.100	-	-
Title: Enhanced Fuse for 70mm Warhead (United States Special Operations Command (USSOCOM)) ***Description:*** Validates a fuse that allows the pilot to change settings while in-flight to engage a wide range of targets. Currently, Special Operations Aviation Forces are missing targets of opportunity due to their inability to reset rocket fuses once airborne. The primary outputs and efficiencies to be demonstrated from the project are mission flexibility that reduces dependence on Joint Direct Attack Munitions and Hellfire Rocket and avoids Research, Development, Test, and Evaluation (RDT&E) procurement, operations, and support costs worth $68.000 million. ***FY 2011 Accomplishments:*** Delivered Government Furnished Equipment umbilical(s) in 2Q FY 2011, and completed internal vendor engineering performance testing in 3Q FY 2011. Began environmental, technical, safety and fuse testing in 4Q FY 2011. ***FY 2012 Plans:***	1.092	0.165	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Complete environmental, technical, safety, and fuse testing through 2Q FY 2012. Conduct airworthiness testing during 3Q FY 2011, complete Weapon Systems Explosive Safety Review Board (WSERB) in 4Q FY 2012, and conduct Phase Two operational/ user testing through 4Q FY 2012. ***FY 2013 Plans:*** Obtain Milestone C Decision and Fielding and Deployment Release. Submission of closeout report will occur in 1Q FY 2013.			
Title: Landing Craft Air Cushion (LCAC) Operator Suspension Seats (Navy) ***Description:*** The LCAC Operator Suspension Seats project will test and field Commercial Off-The-Shelf (COTS) suspension seat for LCAC operators that will lower the risk of lumbar spine injury and long-term disability. The suspension seat technology will improve war-fighter mission readiness and operator availability on the LCAC. The seats will undergo a technical evaluation of human factors at Naval Surface Warfare Ceneter (NSWC)-Panama City and a war-fighter evaluation will occur at Assault Craft Units (ACU) 4 and 5. The selected operator suspension seat will be used throughout the life cycle of the LCAC program into 2030 and beyond with integration into the Ship to Shore Connector (SSC/LCAC 100). The primary outputs and efficiencies produced by this project are: 1) reduced number of injuries to LCAC crew due to whole-body vibration exposure, 2) reduced operator fatigue during missions; and 3) avoidaince of Research, Development, Test, and Evaluation (RDT&E) operations and support costs worth $10.500 million. ***FY 2011 Accomplishments:*** Procured test articles for the technical evaluation phase, 4Q FY 2011. Developed and obtained approvals for both technical and war-fighter evaluation test plans in 4Q FY 2011. Completed mechanical and electrical technical installation instructions for test craft in 4Q FY 2011. ***FY 2012 Plans:*** Receive test articles for technical evaluation phase in 1Q FY 2012. Complete form and fit installation test on NSWC-Panama City test craft 1Q FY 2012. Complete development of a standard installation procedure for Fleet craft in 1Q FY 2012. Procure test articles for war-fighter evaluation phase in 1Q FY 2012. Receive test articles for war-fighter evaluation phase during 2Q FY 2012. Install operator seats on ACU-4 and ACU-5 craft during during 2Q FY 2012. Complete technical evaluation in 2Q FY 2012. Complete war-fighter evaluation in 3Q FY 2012. Complete final evaluation report and project close-out report in 4Q FY 2012.	1.000	0.221	-
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 the 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, minimized opportunities for accidental rocket motor initiation, and reduced burden of transporting non-IM compliant munitions.	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Awarded propulsion system contract in 1Q FY 2011. Received propulsion system test articles during 2Q FY 2011. Initiated IM Testing beginning in the 3Q FY 2011 and completed in 3Q FY 2011. Initiated qualification testing beginning of 4Q FY 2011. ***FY 2012 Plans:*** Finalize propulsion system qualification testing 1Q FY 2012. Initiate Critical Design Review during 1Q FY 2012 and complete review in 2Q FY 2012. Complete the Weapon System Explosives Safety Review Board Certification process, procurement decision, final technical report during 3Q FY 2012.			
Title: Marine Grade Aluminum Plate (Navy)	0.750	0.230	-
Description: Marine Grade Aluminum Plate evaluates an engineered aluminum plate with superior corrosion resistance for use as a repair and replacement material for a ship's superstructure. A unique manufacturing technique produces a multi-layered material that is rolled into sheet having a marine grade aluminum core with a corrosion resistant outer layer. A particular concern is an aluminum alloy's susceptibility to sensitization, a micro-structural 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. This will provide increased survivability, sustainability, and operational readiness compared to current decking and bulkhead plate. Estimations for CG repair and replacement costs due to sensitization and cracking of aluminum plate is between $1.000 million and $2.000 million per repair cycle. Extrapolating this cost across the fleet over the first repair cycle would translate to costs in excess of $22.000 million that would be saved using an aluminum plate material that is capable of meeting the service lifetime requirements of 35 years. ***FY 2011 Accomplishments:*** Finalized specimen machining and testing plan in 3Q FY 2011. Procured second and third lots of test material during 3Q FY 2011. Received second lot of test material in 4Q FY 2011. ***FY 2012 Plans:*** Commence long-term exposure corrosion testing, fabricate test samples, and commence mechanical property testing during 1Q FY 2012. Conduct evaluation of weld-ability of product in 1Q and 2Q FY 2012. Evaluate effects of paint removal and non-skid removal throughout 1Q and 2Q FY 2012. Perform aging and aluminum sensitization testing through 1Q FY 2012 to 3Q FY 2012. Conduct fatigue and fracture toughness testing 2Q FY 2012. Perform adhesion and wear tests in 2Q FY 2012. Complete mechanical property, fracture, and fatigue testing in 2Q and 3Q FY 2012. Continue data acquisition from long-term exposure corrosion testing in 3Q FY 2012. Prepare technical test report and closeout report and make procurement decision in 4Q FY 2012.			
Title: Micro-Smooth Coating System (Navy)	0.750	0.152	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: Micro-Smooth Coating System evaluates a commercially available coating system in conjunction with standard topcoats to reduce parasite or skin friction drag. This coating offers the potential to decrease fuel consumption, improve flight characteristics, and extend paint coating life. An A-glaze reactive polymer will be evaluated and results will be compared to other commercial products being tested. ***FY 2011 Accomplishments:*** Delivered a test article in 4Q FY 2011. Contracted and fabricated a wind tunnel model in 4Q FY 2011. ***FY 2012 Plans:*** Initiate materials performance lab testing in 2Q FY 2012. Perform wind tunnel testing during 2Q FY 2012. Conduct materials performance tests throughout 2Q and 3Q FY 2012. Perform environmental and other surface tests during 3Q FY 2012. Finalize technical test report, procurement decision and project close-out report by the end of 4Q FY 2012.			
Title: Multi Diver Heating & Cooling System (MDHCS) for Wet Submersibles (USSOCOM) ***Description:*** Multi Diver Heating & Cooling System (MDHCS) for Wet Submersibles validates an underwater heating and cooling system that maintains a combat diver's core body temperature, regardless of water temperature. MDHCS is based on a miniature vapor compression cycle heat pump that exchanges fluid through high density liquid circulating garments worn by Special Operations Forces (SOF). The primary outputs and efficiencies to be demonstrated in the project are mission enhancing survival system that will be integrated in future shallow water combat submersibles and avoidance of Research, Development, Test, and Evaluation (RDT&E) and manufacturing costs worth approximately $26.800 million. ***FY 2011 Accomplishments:*** Negotiated contract and performed test planning in 4Q FY 2011. ***FY 2012 Plans:*** Award test article contract during 1Q FY 2012. Test articles will be delivered and developmental testing will begin in 2Q FY 2012. ***FY 2013 Plans:*** Complete developmental testing in 2Q FY 2013. Conduct operational testing from 2Q FY 2013 to 4Q FY 2013. Submit closeout report during 4Q FY 2013.	1.200	0.425	-
Title: Multi-fuel Submersible Outboard Engines (United States Special Operations Command (USSOCOM)) ***Description:*** Multi-fuel Submersible Outboard Engines validates 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)	0.500	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Directive 4140.25 Management Policy for 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 2011 Accomplishments:*** Completed phase three, which consisted of final configuration modification and technical testing. ***FY 2012 Plans:*** Phase Four will be conducted and consists of final developmental and operational testing, followed by production decision. Closeout Report will be submitted in 2Q FY2012.			
Title: Sheeted Nitrocellulose for Combustible Case Cartridges (Army) ***Description:*** Sheeted Nitrocellulose for Combustible Case Cartridge project will qualify the hammer-mill process for production of sheeted nitrocellulose (NC). Sheeted NC is currently made for combustible cartridge cases using baled cotton linters imported from Israel. There is no domestic source of baled cotton linters. Enough baled cotton linters were purchased to support sheeted NC production through FY 2011. This project will eliminate the risk of supply disruption of sheeted nitrocellulose for combustible case cartridges for the army by qualifying a process to decompose sheeted cotton linters. ***FY 2011 Accomplishments:*** Contracts were awarded and lab testing is in progress. ***FY 2012 Plans:*** Award Phase Two of contract to Valleyfield for characterization analysis. Deliver analysis to Esterline for manufacturing of combustible cases for 120 millimeter (mm) and 81 mm mortar charge increments. Once the cases are manufactured they will be sent to Yuma Proving Ground (YPG) for ballistic test evaluation.	0.800	0.450	-
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, the quality and nutrients are well preserved. Furthermore, the system can be used to incorporate supplemental nutrients (such as tumeric and green tea extract) and quality enhancers (such as 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 2011 Accomplishments:***	0.950	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Completed the testing and evaluation of Phase Two. All samples passed requirements. Phase Three contract has been awarded in accordance to Army's food service specifications and requirements ***FY 2012 Plans:*** Testing should conclude in 3Q FY 2012, with an acquisition strategy set up to install a pilot scale unit for production for the military.			
Title: Precision Sniper Rifle (PSR) (Foreign and Domestic) (United States Special Operations Command (USSOCOM)) ***Description:*** Precision Sniper Rifle competitively evaluates and tests sniper rifle systems and scopes with improved lethality. Rifle systems include weapon, noise and flash suppression, ammunition and support articles. The primary outputs and efficiencies to be demonstrated in the project are increased lethality at long ranges consistent with the current operational environment and avoidance of Research, Development, Test, and Evaluation (RDT&E) costs worth $1.390 million. ***FY 2011 Accomplishments:*** Completed scope user assessment in 1Q FY 2011. Conducted joint source selection in 2Q FY 2011, and awarded production contract 3Q FY 2011. Prepared PSR solicitation documents. ***FY 2012 Plans:*** Reissue PSR weapon system solicitation in 1Q FY 2012. Perform “go/no go” competitive test of candidate (Precision Sniper Rifle) PSR weapon systems and complete source selection in 3Q FY 2012. Contract for PSR Engineering Test Units set for 4Q FY 2012.	0.850	-	-
Title: Pyrolysis Solid Waste Disposal With Energy Recovery (Army) ***Description:*** Pyrolysis Solid Waste Disposal With Energy Recovery tests and evaluates 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, reducing potential threats to the force. Primary outputs: (1) produce a system that will be self-powered reducing the need for additional fuel and (2) reduce the amount of fuel needed to support the base camp, thereby reducing logistics burden. ***FY 2011 Accomplishments:*** Test terminated, project closed out. System encountered problems during operational testing that could not be resolved by manufacturer.	0.750	-	-
Title: Rapid Deployment and Extended Autonomy for Single and Multiple Unmanned Underwater Vehicle (UUVs) (Navy) ***Description:*** The United States (U.S.) Navy will evaluate a module for autonomous mission planning that integrates the existing Common Operator Interface Navy (COIN) tool to permit adaptive mission execution with unmanned underwater vehicles (UUVs).	0.800	0.975	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
In addition to demonstrating new behaviors and algorithms, including automated target recognition (ATR), the tool will be adapted to provide an open and modular interface for third-party autonomy algorithms that will support Navy's ongoing applications and produce competition for future capabilities. The effort aims to increase UUV mission capabilities through autonomy and provide an interface for application of existing Navy adaptive behaviors to improve fielding efforts. Efforts will produce an estimated 33% decrease in mine countermeasures (MCM) total mission time and a 33% decrease in human-caused pre-programming errors without degradation of system key performance parameters. Based on reported present capabilities and open integration model, the effort is also estimated to avoid Research, Development, Test, and Evaluation (RDT&E) and Operations and Support costs worth over $2.000 million. ***FY 2011 Accomplishments:*** Defined testing methods for autonomy and aligned present system capabilities with Navy's needs and mission objectives in 3Q FY 2011. Completed preliminary adaptation of existing software to Navy systems in 4Q FY 2011. ***FY 2012 Plans:*** Complete adaptation of existing software to Navy systems. Execute preliminary prototype demonstration at contractor facility on multiple platforms during 3Q FY 2012. Complete government simulation testing of prototype modules to verify and validate performance as well as open interface in 3Q and 4Q FY 2012. Perform initial government evaluation followed by final adaptation of module to government systems in 4Q FY 2012. ***FY 2013 Plans:*** Continue to perform final adaptation of module to Government systems through 1Q FY 2013. Conduct final integration and demonstration of autonomy module on Government systems at Government facility in 2Q FY 2013. Finalize technical test report, procurement decision and project close-out report by the end of 3Q FY 2013.			
Title: Reconnaissance Airborne Pod TORnado (RAPTOR) Precision Targeting (PT) (Navy) ***Description:*** Provide the Distributed Common Ground System – Navy (DCGS-N) and Distributed Common Ground System - 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. Systems 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 United States (US) forces to leverage coalition ISR assets and reduce mission requirements for US ISR platforms.	1.500	1.020	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Completed project planning and awarded contracts to US and United Kingdom (UK) vendor support teams in 3Q and 4Q FY 2011. Met with Ministry of Defense (MoD) and RAF leadership in 4Q FY 2011 to discuss Foreign Comparative Testing (FCT) plans for data collection, analysis, sensor model development, and real-time flight testing, scheduled for 2Q FY 2012. Initiated ISR data analysis with samples to support sensor model development for 4Q FY 2011. ***FY 2012 Plans:*** Establish contract with Goodrich Aerospace of the UK for RAPTOR download and conversion to US National Imagery Transmission Format (NITF) testing in1Q FY 2012. Coordinate plans for target surveys, flight testing and data evaluation in 1Q FY 2012. Conduct flight tests by the end of 2Q FY 2012 at RAF Marham. Continue data analysis and begin targeting reliability validation throughout the 3Q and 4Q FY 2012. ***FY 2013 Plans:*** Continue and complete flight testing and target reliability validation. Prepare data validation analysis package in 2Q FY 2013. Deploy to DCGS-N and DCGS-MC Programs by the end of 3Q FY2013. Finalize technical test report and project close-out report by the end of 3Q FY 2013.			
Title: Rifle Accessory Control Unit (RACU) (Navy) ***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 Military Standard (MIL-STD) 1913 or Standardization Agreement (STANAG) 4694 NATO Accessory Rail. 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 Accomplishments:*** Project cancelled due to technical challenges.	-	-	-
Title: Robotic – Moving Target System (R-MTS) (Navy) ***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.	0.750	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Completed technical and safety testing efforts in 1Q FY 2011. Conducted field user evaluation through 2Q – 3Q FY 2011. Completed technical and safety testing in 3Q FY 2011. Completed technical report for two wheeled variant in 3Q FY 2011. Received additional funding in support of four wheeled variant testing. Modified contract to support four wheeled test articles in 4Q FY 2011. ***FY 2012 Plans:*** Initiate fabrication of four wheeled variant test articles in 1Q FY 2012. Receive test articles early in 4Q FY 2012. Initiate technical/ safety testing and field user evaluations by the end of 4Q 2012. ***FY 2013 Plans:*** Finalize technical test report, seek procurement decision, and produce project close-out report during 1Q - 2Q FY 2013.			
Title: Special Operations Forces (SOF) Close Target Reconnaissance Systems (United States Special Operations Command (USSOCOM)) ***Description:*** SOF Close Target Reconnaissance Systems tests covert close-target audio, video and optical reconnaissance systems to capture and transfer near real time actionable intelligence information with instant data ex-filtration on foreign hostile treat activities. The primary outputs and efficiencies to be demonstrated in the project are the capability to monitor and engage high value targets using covertly staged devices with low detection. Monitor systems that capture and transfer near-real-time digital imagery, video and audio feeds, as well as the capacity to provide biometric, forensic and document media exploitation data to facilitate targeting, interrogation, and information sharing. Avoids approximately $82.150 million Research, Development, Test, and Evaluation (RDT&E) manufacturing, production and operations and support costs. ***FY 2011 Accomplishments:*** Obtained receipt of various test articles and tested sensitive site systems through 4Q FY 2011. ***FY 2012 Plans:*** Complete operational suitability, effectiveness, safety and interoperability testing of component systems through 4Q FY 2012. Obtain Milestone C decision and fielding and deployment release in 4Q FY 2012. ***FY 2013 Plans:*** Submit closeout report by 1Q FY 2013.	1.500	-	-
Title: Stand-Off Gas Cloud Detector for Chemical Warfare Agents (United States Special Operations Command (USSOCOM)) ***Description:*** Stand-Off Gas Cloud Detector for Chemical Warfare Agents validates 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	1.350	0.519	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
chemical/industrial toxic agents of Special Operations Forces (SOF) peculiar interest. The candidate detector uses un-cooled Infra-red (IR) micro-bolometer technology. The primary outputs and efficiencies to be demonstrated in the project are to provide SOF a detection capability that it does not currently posses and to avoid Research, Development, Test, and Evaluation (RDT&E), manufacturing, and production costs worth $10.664 million. ***FY 2011 Accomplishments:*** Completed test planning and negotiated task order with contracted university test agency through 4Q FY 2011. ***FY 2012 Plans:*** Complete test article contract during 1Q FY 2012. Receive test articles and obtain safety release in 3Q FY 2012, and begin initial technical testing in 4Q FY 2012. ***FY 2013 Plans:*** Complete technical testing during 1Q FY 2013. Conduct combined developmental and operational testing through 3Q FY 2013. Obtain Milestone C decision and submit closeout report in 4Q FY 2013.			
Title: Sub Caliber Training System for Multi-role Anti-armor Antipersonnel Weapon System (MAAWS) (United States Special Operations Command (USSOCOM)) ***Description:*** Evaluate sub-caliber training systems for the 84mm Carl Gustaf recoilless weapon system. The training system includes an 84mm ammunition adapter that fires sub-caliber ammunition. The primary outputs and efficiencies to be demonstrated in the project are realistic, cost effective savings for expensive 84mm weapons mission application training and to avoid Research, Development, Test, and Evaluation (RDT&E) procurement and operations and support costs worth approximately $194.600 million. ***FY 2011 Accomplishments:*** Completed source selection evaluation through 2Q FY 2011. Compiled Joint Safety Evaluation Board data package in 3Q FY 2011, and negotiated test article contract by 4Q FY 2011. ***FY 2012 Plans:*** Receive test articles during 1Q FY 2012. Conduct combined developmental and operational testing through 3Q FY 2012. Obtain Joint Safety Evaluation Board certification during 3Q FY 2012. Obtain Milestone C decision and submit closeout report 4Q FY 2012.	0.800	-	-
Title: Submarine Survivor Locating Device (Navy) ***Description:*** Tests an automatic location device utilizing Very High Frequency (VHF) radio technology integrated with the Global Positioning Satellite (GPS) System. It will enable Navy rescue operations to home directly on submarine escape survivors in	0.600	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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 2011 Accomplishments:*** Completed baseline at-sea signal acquisition testing in 2Q FY 2011. Conducted vendor led testing in 4Q FY 2011. Evaluated test results during 4Q FY 2011. Drafted close-out report and final technical report in 4Q FY 2011. ***FY 2012 Plans:*** Complete and submit project close-out report and final technical report in 1Q FY 2012.			
Title: Ultra High Energy Rechargeable Battery (Army) ***Description:*** Ultra High Energy Rechargeable Battery tests a new rechargeable BB-2590/U battery, which consists of lithium-ion cells and replaces a battery used in many United States (US) Army portable radios and electronics equipment. The batteryis 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 Ampere hour (Ah) (24 percent) greater capacity, and 38 Watt-hours (20 percent) greater energy. At -32 degrees Celsius (°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, creates greater run time, and equals fewer batteries required for missions. ***FY 2011 Accomplishments:*** Completed temperature and drop testing. Completed Base Realignment and Commission (BRAC) move from Fort Monmouth to Aberdeen Proving Ground. Completed utility power wiring to enable equipment operation in the Environmental Testing Facility for the mechanical shock and life cycle testing. ***FY 2012 Plans:*** Complete testing and evaluation, and procurement decision expected to be made by 4Q FY 2012.	0.750	-	-
Title: United States Marine Corps (USMC) M1A1 Laser Warning System (LWS) (Navy) ***Description:*** USMC M1A1 Laser Warning System tests 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, gives the tank crew the angle of arrival within +/- 1 degree, and increases survivability and save lives. ***FY 2011 Accomplishments:***	0.750	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Completed test planning in 2Q FY 2011. Continued fabrication of test articles through 1Q FY 2011 and 2Q FY 2011. Received test articles 3Q FY 2011. Initiated technical and integration testing beginning in 4Q FY 2011. ***FY 2012 Plans:*** Complete technical and 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 2Q FY 2012. Complete and submit project close-out report by 3Q FY 2012.			
Title: Ballistic Pelvic Protection (BPP) (Navy) ***Description:*** The Ballistic Pelvic Protection (BPP) will decrease injuries to Marines subjected to mines and Improvised Explosive Devices by protecting the groin area, femoral arteries, and substantial parts of the upper leg from secondary fragments, sand, and debris emanating from a ground blast. Injuries to these vital areas frequently result in loss of reproductive organs, life changing impairments, or possibly fatal bleeding. BPP will provide additional protection to the lower body and pelvic area. The War-fighters will encounter reduced injuries to vital pelvic areas and reproductive organs caused by secondary fragments and/or sand and debris emanating from a ground blast. BPP also reduces the amount of infections that may develop from sand and debris. ***FY 2011 Accomplishments:*** Approved as a FY 2011 Out-of-Cycle project and funded during 4Q FY 2011. Initiated contract preparation. ***FY 2012 Plans:*** Complete contract award in 1Q FY 2012. Initiate and complete test planning during 2Q FY 2012. Receive test articles in 2Q FY 2012. Initiate performance and ballistic testing in 3Q FY 2012. Conduct user evaluations during 3Q FY 2012. Complete all test efforts early in 4Q FY 2012. Finalize technical test report, procurement decision and project close-out report by the end of 4Q FY 2012.	0.500	-	-
Title: Foreign Comparative Testing (FCT) FY 2012 and FY 2013 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 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: 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:***	-	11.666	18.174

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Initiate new start projects and support ongoing projects. ***FY 2013 Plans:*** Initiate new start projects and support ongoing projects.			
Accomplishments/Planned Programs Subtotals	26.642	18.674	18.174

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD (AT&L)) Strategic Objective 4-2D: Speed technology transition focused on war-fighting needs with the objective to transition 30 percent of completing demonstrations program per year. Since the program's inception in 1980, Office of Secretary of Defense (OSD) has initiated 646 projects; 579 projects have been completed to date. Of the 279 evaluations that met the sponsors' requirements, 231 led to procurements worth approximately $10.850 billion in FY 2011 constant year dollars. With an OSD investment of about $1.130 billion, the FCT program has realized an estimated RDT&E cost avoidance of $7.800 billion in FY 2011 constant year dollars. In FY 2011 FCT had a transition rate of 93 percent for completed projects, exceeding the objective of 30 percent for demonstration programs.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	38.375	40.438	43.195	-	43.195	42.514	46.274	48.292	49.182	Continuing	Continuing
P142: *Systems Engineering*	33.490	35.829	38.452	-	38.452	37.391	40.522	41.980	42.415	Continuing	Continuing
P143: *Program Protection*	4.885	4.609	4.743	-	4.743	5.123	5.752	6.312	6.767	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 Deputy Assistant Secretary of Defense for Systems Engineering (DASD(SE)) is the principal advisor to the Secretary of Defense, the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) and the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) on systems engineering, development planning, and related technical fields in the Department of Defense. The DASD(SE) 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 DASD(SE) 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 DASD(SE) 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 DASD(SE) provides independent assessments of defense acquisition program's systems engineering, development planning, technical execution, and risk. The DASD(SE) 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 DASD(SE) 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 DASD(SE) integrates systems engineering with Mission Assurance in the acquisition system. The DASD(SE) 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 DASD(SE) prepares and submits an annual report to Congress on systems engineering activities and effectiveness.

This PE includes effort by the office of the DASD(SE) 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

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605142D8Z: *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.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	29.824	41.884	45.188	-	45.188
Current President's Budget	38.375	40.438	43.195	-	43.195
Total Adjustments	8.551	-1.446	-1.993	-	-1.993
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.928	-1.166			
• Other Adjustments	2.603	-	-1.993	-	-1.993
• Economic Assumptions	-0.188	-	-	-	-
• FFRDC	-0.136	-0.280	-	-	-
• Congressional Add	7.200	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P142: *Systems Engineering*	33.490	35.829	38.452	-	38.452	37.391	40.522	41.980	42.415	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 Deputy Assistant Secretary of Defense for Systems Engineering (DASD(SE)) to: (1) provide flexible engineering policy, guidance, and workforce development requirements for the Department of Defense (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 program engagements 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 (MDAPs) 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 MDAPs.
• Conceive plans and lead program support reviews and assessments of MDAP weapons systems and other programs (e.g., Major Automated Information Systems (MAIS)) 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: (1) developing guidance to enhance Systems Planning, Research, Development and Engineering (SPRDE) and Production Quality and Manufacturing (PQM) acquisition career planning and

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

progression; and (2) monitoring, and facilitating Defense Acquisition University (DAU) updates to the 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 systems engineering challenges such as systems of systems (SoS) systems engineering, systems engineering 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 2011	FY 2012	FY 2013
Title: Systems Engineering Initiatives	33.490	35.829	38.452
Description: The DASD(SE) provides objective assessments of program risk to support knowledge-based decision making by DoD leaders regarding DoD MDAPs and MAISs. ***FY 2011 Accomplishments:*** Strategic Thrust: Major Program Support • Provided deep-dive SE reviews of MDAPs and special interest programs. • Expanded conduct of SE and execution risk assessments. • Initiated systems integration and development planning risk assessments. • Expanded monitoring programs, providing SE oversight to include all MDAPs, MAIS and special interest programs. • Conducted systemic analysis and process management. • Expanded root cause analysis conducted during and after Program Support Reviews (PSRs). • Initiated detailed performance measurements and analysis. • Participated in Overarching Integrated Product Teams (OIPTs) and provided 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). • Reviewed MDAP Request for Proposals for critical reliability requirements. Strategic Thrust: Department SE Capabilities Assessment			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Conducted analysis of Military Departments self-assessments; conducted analysis of DoD's SE capability. • Authored annual Congressional Report jointly with Development Test and Evaluation (DT&E). • Worked jointly with DT&E to develop and track new measurable performance criteria. • Developed and strengthened component SE organization and capabilities. Strategic Thrust: Policy and Guidance • Developed and updated core SE policy, guidance and standards; reviewed all acquisition policy for SE implications. • Developed and updated SE policy, guidance and standards. • Directed support and oversight to software intensive programs. • Developed and authored specialty engineering policy, guidance, and standards. • Provided workforce development: Functional Lead for SPRDE, PQM, and assisted software engineering. • Provided SE guidance to DoD earned value management (EVM). • Fostered 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 • Developed policy and guidance for development planning and early SE; oversaw its establishment within Services. • Performed early acquisition risk assessment including pre-Milestone A engagement with Joint Requirements Oversight Council processes. • Supported Services and Combatant Commands (COCOMs) in pre-milestone (MS) A formulation. • Supported requirements analyses and analysis of alternatives. • Supported initial capabilities document definition and development. • Oversaw and executed modeling, simulation, and analysis for DoD. • Enhanced modeling and simulation (M&S) support to analysis of alternatives. • Led systems engineering research, systems of systems research and collaboration across Services and identified areas of improvement; develop and establish best practices. • Oversaw the Systems Engineering Research University Affiliated Research Center (UARC) and conducted studies and analysis.			
FY 2012 Plans: Strategic Thrust: Major Program Support • Deep-dive systems engineering reviews of MDAPs and special interest programs. • Expand conduct of SE and execution risk assessments. • Initiate systems integration and development planning risk assessments. • Expand monitoring of programs, provide SE oversight to include all MDAPs, MAIS, and special interest programs.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Conduct systemic analysis and process management. • Expand root cause analysis conducted during and after PSRs. • Initiate detailed performance measurements and analysis. • Participate in OIPTs providing decision-quality information and recommendations to DABs, IPRs, DSABs and ITABs. • 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 SE capability. • Author annual Congressional Report jointly with 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 SPRDE, PQM and assist software engineering. • Foster early integration of systems safety, reliability, maintainability and life cycle sustainment into pre-MDAPs, MDAPs and pre-MDD activities. Strategic Thrust: Early Systems Engineering and Development Planning • Develop policy and guidance for development planning and early SE; oversee its establishment within Services. • Perform early acquisition risk assessment including pre-MS A engagement with Joint Requirements Oversight Council processes. • Support Services and COCOMs in pre-MS A formulation. • Support requirements analyses and analysis of alternatives. • Support initial capabilities document definition and development. • Lead systems engineering research, systems of systems research and collaboration across Services to identify areas of improvement; develop and establish best practices. • Oversee the Systems Engineering Research UARC and conduct studies and analysis.			
FY 2013 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Continuation of FY 2012 efforts.			
Accomplishments/Planned Programs Subtotals	33.490	35.829	38.452

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P143: *Program Protection*	4.885	4.609	4.743	-	4.743	5.123	5.752	6.312	6.767	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, the ongoing refinement of risk management processes, and creation of needed technology.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Program Protection	4.885	4.609	4.743
FY 2011 Accomplishments: • Published Program Protection Plan Guidebook. Implemented Program Protection Plan procedures with programs on an ongoing engagement basis with verification as they approached major milestone reviews. Conducted support reviews for up to 15 Major Defense Acquisition Programs (MDAPs) and developed guidance for criticality analysis with Services to augment current research technology protection focused activity with procedures to ensure protection of critical components. • Developed acquisition guidance for supply chain risk management that incorporated lessons learned from vulnerability assessments conducted. Supported programs in effective implementation of needed supply chain risk management. Assessed sustainment issues for protection of critical components and program information. • Collaborated 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. Developed and implemented process for adjudicating public comments. Provided acquisition support to DIB Cyber Security program.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Oversaw and managed the acquisition security database; tracked implementation by the components. Developed horizontal protection requirements. Developed 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 tracked progress to verify protection of critical program capabilities. Review ACAT I Program Protection Plans and provide recommendations for their approval to Under Secretary of Defense for Acquisition, Technology, and Logistics. • 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 DIB Cyber Security program. • Oversee and manage the acquisition security database and tracked implementation by the components. Implement horizontal protection adjudication process. Evolve the Horizontal Protection processes to meet changing threats. ***FY 2013 Plans:*** Continuation of FY 2012 efforts.			
Accomplishments/Planned Programs Subtotals	4.885	4.609	4.743

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0605151D8Z: *Studies and Analysis Support - OSD*							
COST ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	-	-	6.457	-	6.457	6.460	6.566	6.568	6.568	Continuing	Continuing
001: *Joint Service Training & Readiness System Development Program*	-	-	6.457	-	6.457	6.460	6.566	6.568	6.568	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Joint Service programs were established by the Secretary of Defense to improve the training and readiness of the Active and Reserve Components. This project expedites the prototype development of new training and readiness technologies and Joint Service training and readiness systems, which improve the training and readiness effectiveness and enhance the performance of the military forces. It also facilitates the sharing of training and readiness information, while allowing for the transfer of emerging and innovative technologies among the Services and private sector. Efforts have included: development of mission essential tasks; design, development, and implementation of performance metrics, data, and methodologies for the Joint Assessment and Enabling Capability to guide Training Transformation and support the Department's balanced scorecard and Defense Readiness Reporting System; identified and defined joint urban training requirements, identified methods to conduct effective joint training, and determined best means to develop simulations, military construction, and other urban training facilities that meet Service, joint, and fiscal demands and requirements; developed joint training regimen requirements and investments ranging from the joint strategic level down to the joint tactical level for joint asymmetric warfare; and developed a joint stability and support operations training roadmap and investment plan for operations other than war including peace enforcement, peacekeeping, and humanitarian assistance.

In addition, this project supports DHRA and DoD training managers (OSD, Joint Staff, Unified Commands, and the Services) in promoting more efficient and effective use of training resources, increasing the effectiveness of military training, and enhancing the readiness and performance of the military forces. Projects analyze the contributions to readiness of various training techniques and programs and use the results to expedite new training concepts and procedures that increase unit effectiveness or decrease costs. Emphasis is placed on developing analytical tools and systematic methodologies to improve training resource allocations.

Program transferred from the Defense Human Resources Activity starting FY 2013. This program is not a new start.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605151D8Z: *Studies and Analysis Support - OSD*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	6.457	-	6.457
Total Adjustments	-	-	6.457	-	6.457
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Transfer in from Defense Human Resource Activity	-	-	6.400	-	6.400
• Economic Assumptions	-	-	0.075	-	0.075
• General Program Reductions	-	-	-0.018	-	-0.018

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Joint Service Training & Readiness System Development	-	-	6.457

FY 2011 Accomplishments:

• Provided analyses on technical and scientific issues needed to develop a Common Framework for making education, training, and performance/decision aiding available on demand-anytime, anywhere-and tailored to the specific needs of individual learners, learning objectives, and environments.

• Provided support to the Joint Knowledge Development and Distribution Capability for ADL Prototype development in support of Joint Staff and Combatant Commanders.

• Provided analysis of current and emerging operational requirements of Combatant Commanders, Training Transformation Joint Management Office and other stake holders to identify major system improvement opportunities.

• Continue to develop mission essential tasks.

• Provided refinement of the DoD training strategy for the Services, combatant commands and Defense Agencies.

• Continued to assist in identifying and analyzing the specific benefits of early and effective incorporation of System Training (ST) details into acquisition programs, particularly those with significant human systems interface requirements.

• Continue to improve process model to assist in the integration of the Adaptive Planning process into JTS

• Provided review analysis of the changing DoD training posture and requirements and their implications for future training resources and capabilities in the Western Pacific.

• Identified the spectrum of requirements the Army will need to address over the coming decade by identifying potential initiatives to improve the match between force design and future employment needs, within expected affordability constraints.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605151D8Z: *Studies and Analysis Support - OSD*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
• Provided study on "Stress on the Force" identifying specialized capabilities required for Irregular Warfare, Partnership Building, Asymmetric Warfare (e.g. cyber) and Civil Support. Established updated DoD training strategy drafts for Services, combatant commands and Defense Agencies • Conducted several logistics and material readiness reviews • Developed strategies to hedge the risk of the occurrence of a major combat operation • Working with Joint Forces Command (Joint Warfighting Center and Joint Unmanned Aircraft Center of Excellence), the Military Departments and other appropriate organizations, developing a results oriented training concept that addresses the effects of competition and airspace restrictions on training, the opportunities that ground units and UAS personnel have to train together in a joint environment, the maximization of the use of available assets and the use of simulation capabilities to enhance training. • Developing reserve component mobilization training strategies to increase personnel stability, particularly among unit leadership, during the last year before mobilization or entry into the availability pool. • Assessed the effect of enlistment incentives, including educational benefits, on prior and non-prior service reserve component recruiting, training and retention. • Assessment of language, regional, and cultural capabilities and their relationship to unit readiness • Study the drivers that effect time-to-readiness, in particular, the bottlenecks in the readiness generating process and provide a roadmap on how best to incorporate information about how long it will take a unit to be ready • Assess and analyze rates of victim satisfaction with the quality of care and response provided by respective military Services' Sexual Assault Prevention and Response (SAPR) Program and to measure if the policies that DoD has in place to serve sexual assault victims has positively impact readiness and retention.			
FY 2012 Plans: • Provide options for reducing force structure; • Provide an assessment and forecast of DoD logistics and material readiness in light of significant programmatic and operational impacts that have occurred and will occur over the next five to ten years. • Development of criteria for Cyberspace Operations Workforce • Continue to assess the current state of logistics/material readiness in the Department and track the performance of various logistical and material processes in DoD. • Continue to support prototype development, assessment and application of DoD's Knowledge Management Systems and Ports. • Analyze estimated rates of personnel instability among unit leadership. • Identify primary underlying causes of instability and assess potential effects of policies to mitigate instability • Continue to develop Virtual Worlds (VW) technology to support Department of Defense (DoD) training. Provide a VW Framework (VWF) which includes an overarching architecture encompassing a number of VW applications, as well as a VW Roadmap and Governance process to implement the VWF. • Continue to develop strategies to combat "Stress on the Force"			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605151D8Z: *Studies and Analysis Support - OSD*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
• Continue to assess the ongoing requirement for Civil Affairs forces an compare the requirements to the planned future capability and offer recommendations on how to address potential training shortfalls. • Provide options to lower or stop suicide rates • Develop alternative approaches to Force Generation and Management • Determine the feasibility of the Regional Integrated Training Environment (RITE) concept prior to moving forward with a formal strategic communications and education effort and determine best approach for concept implementation. • Directly informed the decision to continue the outreach and implementation efforts. • Continue to examine how and why the management of war wounded has changed over time and the historic background how the federal government arrived at the current set of polices and possible changes for the future. • Continue to develop reserve component readiness mobilization strategies. • Analyze training requirements for DoD Counterinsurgency implementation plans • Provide senior decision makers access to the readiness data for Non-Standard forces (Ad Hoc/In-Lieu-Of) prior to their deployment by developing a roadmap and implementation plan to make certain that Non-Standard Forces are assessed in the Defense Readiness reporting System (DRRS) in compliance with Guidance for Employment of the Force (GEF). • Continue to evaluate and develop potential improvements in the Request for Forces (RFF) process as part of the Global Force Management (GFM) system and identify the Defenses Readiness Reporting System (DRRS) could inform the GFM process.			
FY 2013 Plans: • Continue to develop Virtual Worlds (VW) technology to support Department of Defense (DoD) training. • A VW Framework (VWF) which includes an overarching architecture encompassing a number of VW applications, as well as a VW Roadmap and Governance process to implement the VWF. • Continue to monitor and develop strategies to relieve stress on the force. • Continue to analyze training requirement to support the new DoD Strategy for Operating in Cyberspace. • Continue to identify and analyze the specific benefits of early and effective incorporation of system training details into acquisition programs, particularly those with significant human systems interface requirements. • Provide SECDEF options for reducing force structure; • Continue development of criteria for Cyberspace Operations Workforce • Continue to provide options to lower or stop suicide rates • Continue to develop alternative approaches to Force Generation and Management • Continue to examine alternative Courses of Action (COA) for moving RITE from concept to operational capability • Continue to develop and test multiple COAs to provide OASD (RA) leadership with the means to make an informed decision on how best to engage with Services to generate future operational force training and facility cost efficiencies and effectiveness. • Continue to plan and assess training requirements for non-standard force requirements			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605151D8Z: *Studies and Analysis Support - OSD*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
• Assess the effects on readiness and retention on the addition of synthetic cannabinomimetics drugs to the DoD panel of random tested drugs.			
Accomplishments/Planned Programs Subtotals	-	-	6.457

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

Each project contained within this program contains specific metrics to determine progress towards completion. Metrics for all include completed and documented analysis provided by the performer. The completion date for that analysis varies with each project. In addition, to that analysis, each effort contains a roadmap addressing the best use of the findings throughout the department. If the results of the analysis show benefit to the Department, those findings are included in policy, doctrine, tactics and procedures.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters - Physical Security*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	6.197	4.114	4.901	-	4.901	4.969	5.040	5.052	5.151	Continuing	Continuing
P161: *Nuclear Matters*	6.197	4.114	4.901	-	4.901	4.969	5.040	5.052	5.151	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 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. Nuclear Matters is also responsible for policy development and implementation for personnel reliability; nuclear weapons, nuclear command and control, and special nuclear materials security; use control; nuclear weapons transportation; physical security equipment; countering nuclear threats; and nuclear and radiological incident response.

This Program Element can fund travel to support the requirements of this program.

This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	6.264	4.261	4.961	-	4.961
Current President's Budget	6.197	4.114	4.901	-	4.901
Total Adjustments	-0.067	-0.147	-0.060	-	-0.060
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.067	-0.119			
• Economic adjustments	-	-0.028	-0.060	-	-0.060

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters - Physical Security*	PROJECT P161: *Nuclear Matters*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P161: *Nuclear Matters*	6.197	4.114	4.901	-	4.901	4.969	5.040	5.052	5.151	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. Nuclear Matters is also responsible for policy development and implementation for personnel reliability; nuclear weapons, nuclear command and control, and special nuclear materials security; use control; nuclear weapons transportation; physical security equipment; countering nuclear threats; and nuclear and radiological incident response.

This Program Element can fund travel to support the requirements of this program.

This appropriation will finance work, including manpower, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research (systematic study directed toward fuller scientific knowledge or understanding of the subject studied), development (systematic use of the knowledge and understanding gained from research, for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes) and test and evaluation efforts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Nuclear Weapons Council (NWC) and Committee of Principals (CoP)	0.836	0.658	0.785
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 2011 Accomplishments: - 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 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters - Physical Security*	PROJECT P161: *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
- Oversee 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 2013 Plans:*** - Oversee 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 2011 Accomplishments:*** - Build upon FY 2011 initiatives. - Executed confidence building programs of cooperation with international partners. - Sponsored 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. ***FY 2013 Plans:*** - Execute confidence building programs of cooperation with international partners. - Sponsor international partners at national-level nuclear weapons accident/incident exercises.	0.526	0.295	0.363
Title: Nuclear Surety ***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 DoD nuclear surety program is provided by Deputy Assistant Secretary of Defense for Nuclear Matters (DASD(NM)). ***FY 2011 Accomplishments:***	1.034	0.658	0.785

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters - Physical Security*	PROJECT P161: *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
- 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 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." - Support activities that support nuclear surety policy and provide OSD oversight of the Nuclear Surety program. ***FY 2013 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." - 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. ***FY 2011 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 the development of next-generation delivery systems. - Completed stockpile transformation plans.	1.557	1.031	1.218

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters - Physical Security*	PROJECT P161: *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
- Supported new Task Forces for strategic systems. - Maintained and exercised a nuclear enterprise model for DoD. - Provided technical support to maintain strategic materials and nuclear power systems. - Developed a technical analytical capability for making critical decisions regarding the nuclear enterprise. - Conducted analysis of possible warhead replacements using modeling and simulation tools. ***FY 2012 Plans:*** - 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. - Manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80(0,1), B83, W87, W88 Weapons. - Support studies for warhead replacement. ***FY 2013 Plans:*** - 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. - Manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W80(0,1), B83, W87, W88 Weapons. - Support studies for warhead replacement.			
Title: Survivability and Weapons of Mass Destruction (WMD) ***Description:*** In the 2010 Quadrennial Defense Review (QDR), the SECDEF directed the Department to rebalance its policy, doctrine, and capabilities to better support six key missions. The fifth on the list of key missions is to prevent proliferation and counter weapons of mass destruction. This project directly supports the nation's defense strategy. ***FY 2011 Accomplishments:*** - Continue Nuclear Defense Portfolio oversight. - 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 acquisition 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.	1.195	0.773	0.918

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters - Physical Security*	PROJECT P161: *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
- 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 2012 Plans:*** - Oversee the Nuclear Defense Portfolio. - Plan and coordinate the activities of the National Nuclear Forensics Steering Committee and Working Group. - Develop OSD-wide approach to overseeing Global Nuclear Defense missions within DoD. - Oversee the integration of all DoD nuclear defense capabilities in support of the Global Nuclear Defense Initiative. - Support International Conference on Nuclear Security and Technology Demonstrations as part of the Nuclear Security Summit process. ***FY 2013 Plans:*** - Oversee the Nuclear Defense Portfolio. - Plan and coordinate the activities of the National Nuclear Forensics Steering Committee and Working Group. - Develop OSD-wide approach to overseeing Global Nuclear Defense missions within DoD. - Oversee the integration of all DoD nuclear defense capabilities in support of the Global Nuclear Defense Initiative. - Support International Conference on Nuclear Security and Technology Demonstrations as part of the Nuclear Security Summit process.			
Title: Nuclear Matters Support Program ***Description:*** The Nuclear Matters support program conducts studies / analyses; DoD-NNSA Nuclear Weapons Council activities; and provides funding for analytical support functions. ***FY 2011 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 the DoD Sigma 15 Approval Authority (Interface with DOE/NNSA). - Addressed Freedom of Information Act and Mandatory Declassification Requests. ***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).	1.049	0.699	0.832

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605161D8Z: *Nuclear Matters - Physical Security*	PROJECT P161: *Nuclear Matters*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
- Continue to address Freedom of Information Act and Mandatory Declassification Requests. ***FY 2013 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.			
Accomplishments/Planned Programs Subtotals	6.197	4.114	4.901

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 DASD(Nuclear Matters). Success is also measured by the currency of information and usability of the website, timeliness and responsiveness of reports due to Congress, performance in various response exercises, and feedback from a number of senior-level government organizations that DASD(Nuclear Matters) supports.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	14.590	9.122	6.307	-	6.307	6.301	5.648	5.756	5.861	Continuing	Continuing
001: *Command Information Superiority Architecture*	5.560	1.086	-	-	-	-	-	-	-	Continuing	Continuing
002: *Defense Architecture Repository*	1.320	1.215	1.108	-	1.108	1.107	0.992	1.011	1.029	Continuing	Continuing
003: *Integrated Planning and Management*	2.358	1.933	1.783	-	1.783	1.781	1.597	1.627	1.658	Continuing	Continuing
004: *Support to NII Mission Requirements*	5.352	4.888	3.416	-	3.416	3.413	3.059	3.118	3.174	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	15.091	9.437	7.708	-	7.708
Current President's Budget	14.590	9.122	6.307	-	6.307
Total Adjustments	-0.501	-0.315	-1.401	-	-1.401
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.501	-	-1.401	-	-1.401
• FFRDC Reduction	-	-0.063	-	-	-
• SBIR Reduction	-	-0.222	-	-	-
• STTR Reduction	-	-0.030	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011: Includes Department reductions for Secretary of Defense Efficiencies (Studies Contract Efficiency – 1.253 million, Service Support Contract Efficiency -0.382 million), Program adjustment -0.501 million.
FY 2012: FFRDC reduction -0.063 million, SBIR reduction -0.222 million, STTR reduction -0.030 million.
FY 2013: Program adjustment -1.401 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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
001: *Command Information Superiority Architecture*	5.560	1.086	-	-	-	-	-	-	-	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 2011	FY 2012	FY 2013
Title: Command Information Superiority Architectures Accomplishments and Plans	5.560	1.086	-
FY 2011 Accomplishments: - Continued to provide strategy, policy, oversight, and guidance for Architecture across the DoD Enterprise. - Continued development and delivery of the DoD IEA V2.0. - Published Essential DoD Architecture Framework Guide - Continued to work with CC/S/As to ensure capabilities for operating and defending the GIG are acquired, managed, integrated and synchronized. - Continued to refine governance structures to address new policies and oversight requirements. - Continued to monitor and assess component compliance regarding new policies and guidance. - Continued refinement of the Net Centric DoD Architecture Framework to addressed new demands technologies and IA requirements. - Integrated , aligned and updated NetOps architecture (include CND architecture) into IE Architecture construct.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Reviewed and updated (as required) the NetOps policy in support of CYBERCOM - Oversaw execution of Tasks in NetOps I-Plan - Continued to synchronize NetOps activities across DoD - Continued to provide leadership to the development and implementation of GIG SA data strategy - Provided input to the development of DoD IE Strategic Plan Roadmap - Delivered 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. - Delivery deferred for a NetOps solution to NETWARCOM leveraging the GADSS COI deliverable. - Delivered 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. - Continued 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. - Developed 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) - Developed 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. - Developed 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. ***FY 2012 Plans:*** - Continue to provide strategy, policy, oversight, and guidance for Architecture across the DoD Enterprise. ***FY 2013 Plans:*** n/a			
Accomplishments/Planned Programs Subtotals	5.560	1.086	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0902198D8Z: *Command Information Superiority Architecture*	3.651	0.000	0.000		0.000	0.000	0.000	0.000		3.651	3.651

D. Acquisition Strategy

N/A

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
002: *Defense Architecture Repository*	1.320	1.215	1.108	-	1.108	1.107	0.992	1.011	1.029	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 2011	FY 2012	FY 2013
Title: DARS Accomplishments and Plans	1.320	1.215	1.108
FY 2011 Accomplishments: - Recoded all Legacy software code to streamline the Web services - Built out Web measurement and scorecard management capability - Advanced Web GUI, AV-1, and AV-2 registration - Continued Table Graphic EA Architecture search, discovery, and delivery - Continued Table Graphic Drilldown Architectures - Continued enterprise-level operational support for the DoD Architecture Registry System. - Continued to work with DoD Component to refine requirements and processes to effectively expose existing architectures for reuse. - Continued to expand and refine DARS to accommodate registration /federation requirements. - Continued integration of DARS data services into the "Core Enterprise Services".			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- 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”. - Develop Transition Plan for DARS to Operational Command ***FY 2013 Plans:*** - 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”. - Transition DARS support to Operational Command			
Accomplishments/Planned Programs Subtotals	1.320	1.215	1.108

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
003: *Integrated Planning and Management*	2.358	1.933	1.783	-	1.783	1.781	1.597	1.627	1.658	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Integrated Planning and Management Project encompasses the National Leadership Command Capability (NLCC) 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 and budget, integrated mission advocacy, and management of decision-maker capabilities. NMO's objective 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 (WHMO) with oversight of a wide range of DoD command and control and communications (C3) assets and oversees the efforts of the Services and Agencies in the design, integration, and deployment of critical and sensitive C3 capabilities. Three overall areas of focus include: 1) National Senior Leader C3 Systems, Emergency Preparedness, DoD support to Civil Authorities; Continuity of Government (COG); 2) Global Nuclear C2, Integrated Missile Defense, Tactical Warning, Global Strike; and 3) Cyber Mission Indications and Warnings.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Integrated Planning and Management	2.358	1.933	1.783
FY 2011 Accomplishments: Continued management and integration of the various stakeholders responsible for NLCC capabilities – NMO, DISA, ASD(HD), USSTRATCOM, USNORTHCOM, NSA, WHMO, and both the DoD and National Senior Leadership – to identify deficiencies and risks to the programs compromising the applications and services supporting leadership C3 capabilities – the systems, networks, and applications, that coordinate and evolve towards more integrated, sustainable, and distributed capabilities of collaborative voice, video, data, and situational awareness, and that is secure and survivable. - Continued efforts with the University Affiliated Research Center (UARC), Johns Hopkins University Applied Physics Laboratory, and industry partners to better understand nuclear C2 voice conferencing, the commensurate threats and risks to national leadership C2 capabilities, and the facilitating of informed decision making for NLCC - Conducted a Presidential Assessment to determine a long-term strategy for improving secure presidential voice and video communications. - Completed an assessment of the feasibility of using the General Dynamics Sectera vIPer phone in airborne applications to achieve a short-term improvement in secure voice performance - Completed an assessment of how to migrate from current information services to enhanced and more robust capabilities with respect to information systems and services on the systems and networks supporting the nation's senior leadership.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Investigated the performance and capabilities of both candidate and representative C3 systems and technologies - Continue efforts with the UARC to maintain a requirements database, System Concept Document (SCD), Concept of Employment (CONEMP), and provide general Architecture and Systems Engineering support. - Continued support for the management and oversight responsibilities of the Capabilities Integration Team (CIT) and governance needs ***FY 2012 Plans:*** Continued Architecture and Systems Engineering progression. Initiate efforts to assess evolving technologies, to include secure wireless computing, network status visualization, and efforts to best integrate White House, DoD senior leader, and various priority inter-Agency requirements for enhanced and informed decision-making, information sharing, coordination, and resolution of issues across all spectra of threat scenarios, regardless of the time or the disparate locations of the senior leadership. Development of concepts and prototype - 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. ***FY 2013 Plans:*** Continue Architecture and Systems Engineering support for more robust and capable leadership command information services and applications. Investigate concepts and initiate limited prototyping efforts for testing and developing robust, secure, mobile C3 and computing devices and services for senior leadership, for use across various scenarios and security environments.			
Accomplishments/Planned Programs Subtotals	2.358	1.933	1.783

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.

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
004: *Support to NII Mission Requirements*	5.352	4.888	3.416	-	3.416	3.413	3.059	3.118	3.174	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 2011	FY 2012	FY 2013
Title: Support to NII Mission Requirements	5.352	4.888	3.416

FY 2011 Accomplishments:

$3.500 million for Global Positioning System (GPS) User Equipment Synchronization to conduct DoD CIO 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:

- Developed International Supplement to GPS Security Policy for entry into SD 106 process (DODI 4650.0xx).
- Executed Information Assurance/COMSEC Supplement to GPS Security Policy and entered into SD 106 review process (DODI 4650.0yy).
- Developed revised GPS Security Policy for entry into SD 106 review process (DODI 4650.0zz).
- Tied 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.
- Authored draft PNT Navigation Warfare Annexes to all the Operations Plans (OPLANS) and Contingency Plans (CONPLANS) in coordination with US STRATCOM; under review for USSTRATCOM publication.
- Completing Analysis of Alternatives for GPS Enterprise and PNT Assurance alternatives IAW CAPE guidance; completing Navigation Warfare (NAVWAR) AoA.
- Tasked Analysis of Alternatives for Security Control of Navigation Aids DODI 5030.x to Joint Staff.
- Developed NextGen interfaces with the GPS Wing, Joint Program Development Office (JPDO), Air Force, and Policy Board for Federal Aviation (PBFA) for inclusion in FAA NextGen plans.
- Drafted Red Key Sundown Policy for execution by Joint Staff and USSTRATCOM.
- Completed NetCentric Review of OCX and GPS III contract activities.
- 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 DoD CIO as co-chair of the Executive Steering Group.
- Performed annual update of National Five-year Plan for Space-Based Positioning, Navigation and Timing (PNT).

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Applied draft 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. $1.852 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. - 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: $3.384 million for Global Positioning System (GPS) User Equipment Synchronization to conduct DoD CIO 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: - Implement and manage the International Supplement to GPS Security Policy DODI 4650.0xx. - Implement and manage the Information Assurance/COMSEC Supplement to GPS Security Policy DODI 4650.0xx. - Implement and manage the GPS Security Policy DODI 4650.0xx. - 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- 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 and NAVWAR 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-Based PNT and for DoD CIO 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. - Draft the DoD PNT investment strategy and roadmap based on the GPSEM/PNT-A AoA and NAVWAR AoA results. $1.504 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- 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.			
FY 2013 Plans: Global Positioning System (GPS) User Equipment Synchronization to conduct DoD CIO 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: - Implement and manage the International Supplement to GPS Security Policy DODI 4650.0xx. - Implement and manage the Information Assurance/COMSEC Supplement to GPS Security Policy DODI 4650.0xx. - Implement and manage the GPS Security Policy DODI 4650.0xx. - 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 and NAVWAR 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; continue oversight via the NetCentric Operations Capability Portfolio management system to insure that JCIDS requirements, acquisition planning, and PPBE investments are properly synchronized. - Implement the recommendations of the Analysis of Alternatives for Security Control of Navigation Aids DODI 5030.x in the DoD DOTMLPF construct; manage this process via the NetCentric Operations CPM portfolio in JCIDs, DAS, and PPBE. - 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- 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 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). - Begin drafting the 2014 Federal Radionavigation Plan (FRP). - Apply Navigation Warfare Concept of Operations DODI 4650.0xx 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. - Manage and implement the DoD PNT investment strategy and roadmap based on the GPSEM/PNT-A AoA and NAVWAR AoA results; use the NetCentric Operations CPM portfolio to insure PNT material solutions are developed in a synchronized fashion in JCIDs, DAS, and PPBE.			
Accomplishments/Planned Programs Subtotals	5.352	4.888	3.416

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.
- 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 2013 Office of Secretary Of Defense										DATE: February 2012	
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 OUSD(I)*							
COST ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	6.570	15.749	6.601	-	6.601	6.546	6.667	6.860	6.992	Continuing	Continuing
001: *Developmental Activities*	2.874	3.406	3.289	-	3.289	3.333	3.396	3.492	3.560	Continuing	Continuing
002: *Operations Integration*	3.296	3.143	2.861	-	2.861	2.898	2.954	3.051	3.109	Continuing	Continuing
003: *Defense Civilian Intelligence Personnel System*	0.400	-	0.451	-	0.451	0.315	0.317	0.317	0.323	Continuing	Continuing
004: *Haystack Projects*	-	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: Defense Civilian Intelligence Personnel System (DCIPS) provides updates to the Performance Appraisal Application (PAA) Defense Civilian Personnel Data System (DCPDS) used by Military Services Intelligence Components, Defense Security Service (DSS) and the Office of the Under Secretary of Defense for Intelligence to evaluate the performance of their DCIPS employees.

004: Haystack Projects develop and 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. This effort was requested in Overseas Contingency Operations.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense					DATE: February 2012
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 OUSD(I)*		
B. Program Change Summary ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	6.227	15.749	6.820	-	6.820
Current President's Budget	6.570	15.749	6.601	-	6.601
Total Adjustments	0.343	-	-0.219	-	-0.219
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department adjustment	-0.002	-	-0.219	-	-0.219
• Prior Approval Reprogramming	0.400	-	-	-	-
• Congressional Adjustment	-0.055	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 OUSD(I)*	PROJECT 001: *Developmental Activities*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
001: *Developmental Activities*	2.874	3.406	3.289	-	3.289	3.333	3.396	3.492	3.560	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 2011	FY 2012	FY 2013
Title: Developmental Activities	2.874	3.406	3.289
FY 2011 Accomplishments: Continued to leverage technologies, assess innovative capabilities, and develop methodologies to support the Defense Intelligence Enterprise.			
FY 2012 Plans: Continue to leverage technologies, assess innovative capabilities, and develop methodologies to support the Defense Intelligence Enterprise.			
FY 2013 Plans: Will continue to leverage technologies, assess innovative capabilities, and develop methodologies to support the Defense Intelligence Enterprise.			
Accomplishments/Planned Programs Subtotals	2.874	3.406	3.289

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 OUSD(I)*	PROJECT 002: *Operations Integration*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
002: *Operations Integration*	3.296	3.143	2.861	-	2.861	2.898	2.954	3.051	3.109	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program focuses on technologies for the application on activities of the OUSD(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 2011	FY 2012	FY 2013
Title: Operations Integration	3.296	3.143	2.861
FY 2011 Accomplishments: Classified above the Secret level.			
FY 2012 Plans: Classified above the Secret level.			
FY 2013 Plans: Classified above the Secret level.			
Accomplishments/Planned Programs Subtotals	3.296	3.143	2.861

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 OUSD(I)*	PROJECT 003: *Defense Civilian Intelligence Personnel System*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
003: *Defense Civilian Intelligence Personnel System*	0.400	-	0.451	-	0.451	0.315	0.317	0.317	0.323	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

These funds are used to develop modifications to the Performance Appraisal Application (PAA) in the Defense Civilian Personnel Data System. PAA is a performance management tool used by the Military Service Intelligence Components, Defense Security Service and the Under Secretary of Defense for Intelligence.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Defense Civilian Intelligence Personnel System (DCIPS)	0.400	-	0.451
FY 2011 Accomplishments: In preparation for the award of this contract, change request transmittals (CRTs) which will update the DCIPS PAA have been written.			
FY 2013 Plans: Implementation will identify design improvements that will improve effectiveness of the performance management software. Improvements will address specific usability issues identified during a FY 2011 system review, responding to employee and manager feedback.			
Accomplishments/Planned Programs Subtotals	0.400	-	0.451

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0305192D8Z: *Defense Civilian Intelligence Personnel System*	2.893	1.766	1.971		1.971	2.089	2.090	2.023	2.048	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 OUSD(I)*	PROJECT 004: *Haystack Projects*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
004: *Haystack Projects*	-	9.200	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Haystack Projects develop and 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 2011	FY 2012	FY 2013
Title: Haystack Projects	-	9.200	-
Description: Develop and 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 Plans:*** Mission Support (Details provided in Defense-Wide classified book)			
Accomplishments/Planned Programs Subtotals	-	9.200	-

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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	57.247	54.874	-	-	-	-	-	-	-	Continuing	Continuing
P502: *SBIR*	51.780	48.362	-	-	-	-	-	-	-	Continuing	Continuing
P500: *STTR*	5.467	6.512	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

The goals of the Office of the Secretary of Defense (OSD) Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are to stimulate technological innovation, increase private sector commercialization of federal research and development (R&D), increase small business participation in federally funded R&D, and foster participation by minority and disadvantaged firms in technological innovation.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	57.247	54.874	-	-	-
Total Adjustments	57.247	54.874	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	57.247	54.874			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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)*	PROJECT P502: *SBIR*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P502: *SBIR*	51.780	48.362	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The goals of the Office of the Secretary of Defense (OSD) Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are to stimulate technological innovation, increase private sector commercialization of federal research and development (R&D), increase small business participation in federally funded R&D, and foster participation by minority and disadvantaged firms in technological innovation.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: SBIR	51.780	48.362	-
Description: A set-aside program for small business to engage in defense R&D with potential for commercialization. ***FY 2011 Accomplishments:*** Represents 2.5% of the extramural research budget for OSD. In FY 2011, the OSD SBIR/STTR program addressed five critical cross-cutting R&D science and technology areas: - Automony: Autonomous systems to augment military operations - Cyber: Improve the DoD perofrmance for all operations cyberspace - Data-to-Decisions: Shorten the cycle time from data gathering to decisions - Human Systems: Improve the fusion of humans and systems - Engineering Resilient Systems: Expedite design and delivery of trustworthy, adaptable and affordable defense systems ***FY 2012 Plans:*** Represents 2.6% of the extramural research budget for OSD.			
Accomplishments/Planned Programs Subtotals	51.780	48.362	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*	**PROJECT** P502: *SBIR*

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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)*	PROJECT P500: *STTR*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P500: *STTR*	5.467	6.512	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The goals of the Office of the Secretary of Defense (OSD) Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are to stimulate technological innovation, increase private sector commercialization of federal research and development (R&D), increase small business participation in federally funded R&D, and foster participation by minority and disadvantaged firms in technological innovation.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: STTR	5.467	6.512	-
Description: The STTR program funds cooperative R&D projects with small businesses in partnership with not-for profit research institutions (such as universities) to move research to the marketplace. ***FY 2011 Accomplishments:*** Represents 0.3% of the extramural research budget for OSD. In FY 2011, the OSD SBIR/STTR program addressed five critical cross-cutting R&D science and technology areas: - Automony: Autonomous systems to augment military operations - Cyber: Improve the DoD perofrmance for all operations cyberspace - Data-to-Decisions: Shorten the cycle time from data gathering to decisions - Human Systems: Improve the fusion of humans and systems - Engineering Resilient Systems: Expedite design and delivery of trustworthy, adaptable and affordable defense systems ***FY 2012 Plans:*** Represents 0.35% of the extramural research budget for OSD.			
Accomplishments/Planned Programs Subtotals	5.467	6.512	-

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*	PROJECT P500: *STTR*

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Administration*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	2.116	1.854	1.857	-	1.857	1.899	1.938	2.570	2.616	Continuing	Continuing
P518: *SBIR/Challenge Admin*	2.116	1.854	1.857	-	1.857	1.899	1.938	2.570	2.616	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 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 Assistant Secretary of Defense for Research & Engineering. DoD components participating in the STTR Program include the: Army, Navy, Air Force, DARPA, MDA, and OSD.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	2.189	1.854	1.880	-	1.880
Current President's Budget	2.116	1.854	1.857	-	1.857
Total Adjustments	-0.073	-	-0.023	-	-0.023
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.019	-			
• SBIR/STTR Transfer	-0.054	-			
• Economic Assumptions	-	-	-0.023	-	-0.023

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Administration*	PROJECT P518: *SBIR/Challenge Admin*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P518: *SBIR/Challenge Admin*	2.116	1.854	1.857	-	1.857	1.899	1.938	2.570	2.616	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 2011	FY 2012	FY 2013
Title: SBIR/Challenge Admin	2.116	1.854	1.857

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 2011 Accomplishments:

(U) FY 2011 accomplishments included program administration, coordination and execution of the DoD SBIR/STTR Program. Specifically, managed the execution of the FY 2011 DoD SBIR/STTR budget between 11 DoD Components to include:
1) Coordinated and executed the administrative portions of the DoD SBIR/STTR Programs - administered the online topic development tool, developed five SBIR/STTR solicitations (including 697 technical topics), and received and distributed 11,885 SBIR/STTR proposals;

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Administration*	PROJECT P518: *SBIR/Challenge Admin*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
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; 3) Implemented an aggressive outreach program - developed and implemented outreach materials, hosted a three-day training workshop (over 350 attendees), hosted a three-day Beyond Phase II Conference and Technology Showcase (over 400 attendees); maintained a help desk that responded to over 5,000 inquiries, maintained an online desk reference manual, administered an SBIR/STTR Interactive Topic Information System (SITIS) responding to 1,664 questions, and maintained mailing lists (ListServ) targeting specific outreach groups; 4) Coordinated oversight, collected results, tracked execution and reported on Phase III technology transition and the DoD SBIR Commercialization Pilot Program (CPP) (section 252 of the NDAA for FY 2006) - maintained database to document over $30B in commercialization activity and developed CPP Report for Congress; and 5) Prepared all reports required for the SBIR/STTR Programs as mandated by law and policy - Annual SBIR/STTR Report, Energy Independence and Security Act Report, Nanotechnology Report, and Encouraging Innovation in Manufacturing Report.			
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.			
FY 2013 Plans: (U) FY 2013 plan includes program administration, coordination and execution of the DoD SBIR/STTR Program. Specifically, manage the execution of the FY 2013 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	2.116	1.854	1.857

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605790D8Z: *Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Administration*	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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	12.991	15.582	12.056	-	12.056	11.981	12.320	12.963	13.214	Continuing	Continuing
P796: *Laboratory Resource Management*	1.114	5.001	4.819	-	4.819	4.912	5.027	5.117	5.204	Continuing	Continuing
P797: *Defense Technology Analysis*	9.300	7.394	4.796	-	4.796	4.831	5.243	5.999	6.625	Continuing	Continuing
P798: *Defense Support Teams*	2.577	3.187	2.441	-	2.441	2.238	2.050	1.847	1.385	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Assistant Secretary of Defense for Research and Engineering (ASD(R&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 ASD(R&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 ASD(R&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 ASD(R&E) (OASD(R&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 within the OASD(R&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 the Department and the Nation.

The program element also provides engineering, scientific, and analytical support to the Office of the Deputy Assistant Secretary of Defense for 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 ASD(R&E) in acquisition decisions. Full implementation of the Act requires increases in both the number and depth of technology maturity assessments. Funds are required for technical, analytical and management support, equipment and supplies, travel, and publications.

The DoD's key expertise for reviewing and guiding R&E programs resides in the OASD(R&E). The OASD(R&E) staff augment their responsibilities through their connections to technology experts in various fields throughout academia, industry, and government. The Defense 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

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	13.858	16.135	13.172	-	13.172
Current President's Budget	12.991	15.582	12.056	-	12.056
Total Adjustments	-0.867	-0.553	-1.116	-	-1.116
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.193	-			
• SBIR/STTR Transfer	-0.264	-0.445			
• Congressional Adjustments	-2.700	-	-	-	-
• Economic Assumptions	-0.057	-	-	-	-
• FFRDC	-0.036	-0.108	-	-	-
• Other Program Adjustments	-0.003	-	-1.116	-	-1.116

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P796: *Laboratory Resource Management*	1.114	5.001	4.819	-	4.819	4.912	5.027	5.117	5.204	Continuing	Continuing
Quantity of RDT&E Articles											

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 Defense Laboratory Office will develop plans and investment strategies for laboratory infrastructure, technology programs, and personnel development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Defense Laboratory Office	1.114	5.001	4.819

FY 2011 Accomplishments:

Areas of emphasis included:

- Identification of Department-wide laboratory in-house core technical competencies (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 are derived from COCOM S&T Planning Scenarios, Quadrennial Defense Review Technology Area Studies, Intelligence Community products, Technology Horizon Scanning, and DoD/Service strategic plans. Laboratory fiscal information and program execution was collected via the Defense Technical Information Center (DTIC) R&E database. The Defense Laboratory Office, in partnership with DTIC, developed a new data structure and architecture which facilitated 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. From the analysis, the Laboratory Office is able to track the status of the DoD laboratory enterprise's program performance in support of the CTCs. OASD(R&E) teamed 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 ASD(R&E)/Research Directorate Laboratory Office will refine and continue to execute laboratory management responsibilities. Areas of emphasis include:

- Continued identification and validation of Department-wide DoD laboratory in-house CTCs;
- Understanding Service and laboratory performance within CTCs;

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• 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. ***FY 2013 Plans:*** The ASD(R&E)/Research Directorate Laboratory Office will refine and continue to execute laboratory management responsibilities. Areas of emphasis include: • Continued identification and validation of Department-wide DoD 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.			
Accomplishments/Planned Programs Subtotals	1.114	5.001	4.819

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P797: *Defense Technology Analysis*	9.300	7.394	4.796	-	4.796	4.831	5.243	5.999	6.625	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 Deputy Assistant Secretary of Defense for 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 Weapons Systems Acquisition Reform Act (WSARA) of 2009 expanded the role of the ASD(R&E) in acquisition decisions. Full implementation of the Act requires increases in both the number and depth of technology maturity assessments. Funds are required for technical, analytical, and management support, travel, and publications.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: DoD Technology Analysis	9.300	7.394	4.796
FY 2011 Accomplishments: The Defense Technology Analysis program funded over forty efforts in FY 2011. 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 2012 Plans: Provide engineering, scientific, analytical, and managerial support to the Office of the Deputy Assistant Secretary of Defense for 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 2013 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Provide engineering, scientific, analytical, and managerial support to the Office of the Deputy Assistant Secretary of Defense for 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.			
Accomplishments/Planned Programs Subtotals	9.300	7.394	4.796

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 OASD(R&E) 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 2013 Office of Secretary Of Defense			DATE: February 2012
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: *Defense Support Teams*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P798: *Defense Support Teams*	2.577	3.187	2.441	-	2.441	2.238	2.050	1.847	1.385	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 OASD(R&E). The OASD(R&E) staff augments their responsibilities through connections to technology experts in various fields throughout academia, industry, and government. The Defense 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 2011	FY 2012	FY 2013
Title: Defense Support Teams	2.577	3.187	2.441
FY 2011 Accomplishments: Established support teams and conducted technology analyses to support R&E program investment decisions. Continued or completed teams established in FY 2010. Reviewed in technical detail the program issues and offered technical solutions to program managers. Assessed the maturity of technologies that were 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.			
FY 2013 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	2.577	3.187	2.441

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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: *Defense Support Teams*

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 OASD(R&E) influence on acquisition decisions serve as valuable indicators of the program's effectiveness.
- The establishment and outputs of Defense Support 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	19.092	-	-	-	-	-	-	-	-	Continuing	Continuing
P799: *Emerging Capabilities*	19.092	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

This Program Element (PE) transitions from PE 0605799D8Z to PE 0603699D8Z in FY 2012.

A. Mission Description and Budget Item Justification

This funding request supports the development of emerging capabilities under the Assistant Secretary of Defense (Research and Engineering) 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 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605799D8Z: *Emerging Capabilities*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	19.701	-	-	-	-
Current President's Budget	19.092	-	-	-	-
Total Adjustments	-0.609	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.431	-			
• Economic Assumptions	-0.100	-	-	-	-
• FFRDC	-0.072	-	-	-	-
• Other Program Adjustments	-0.006	-	-	-	-

Change Summary Explanation

This PE transitions from PE 0605799D8Z to PE 0603699D8Z in FY 2012.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P799: *Emerging Capabilities*	19.092	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Emerging Capability (EC) funding is utilized to develop new capabilities under the Assistant Secretary of Defense (Research & Engineering) 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 2011	FY 2012	FY 2013
Title: Law Enforcement Capabilities Project	1.087	-	-
Description: The Law Enforcement Capabilities Project advances 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 identified and described specific capabilities relevant to enhancing military cooperation with law enforcement agencies to further improve interagency cooperation. The payoff was the development of a series of tools to enhance the capabilities of military, law enforcement agencies and their mutual interaction. It also identified specific (technological and organizational) capabilities to further develop this capability in the future. ***FY 2011 Accomplishments:*** Completed two table top exercises. Developed doctrinal publications for the Marine Corps and the Department of Justice.			
Title: Gunslinger Package for Advanced Convoy Security (GunPACS)	1.087	-	-
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. GunPACS utilizes 360-degree camera coverage, acoustic shot detection, and networked data fusion technology to determine shooter location information.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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. ***FY 2011 Accomplishments:*** Fielded to Afghanistan for a twelve (12) month operational assessment.			
Title: Humanitarian Assistance/Disaster Response Capability Development effort: QuickNets ***Description:*** The project sought to answer the fundamental question: 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? In previous humanitarian responses, ineffective coordination 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 capitalize on crowd-sourcing to determine how unity of effort can be achieved to help close the gap between identifying resources and their rapid utilization. ***FY 2011 Accomplishments:*** Completed three software builds, each based on lessons learned from demonstrations, of a crowd-sourced situational awareness tool. Participated in two operational demonstrations sponsored by Special Operations Command.	1.087	-	-
Title: Building Effective States ***Description:*** The problem of failing and failed states is increasingly recognized as a key challenge in the contemporary world and lies 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 United States Government (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. ***FY 2011 Accomplishments:*** Completed Phase I, a comprehensive mapping/catalogue of United States and international conflict/institutional assessment tools.	1.087	-	-
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,	1.087	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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. In the near term, this project augmented current kinetic capabilities available to units occupying small FOBs by providing the capability for precision mortar fire. 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 provided rapid, 360 degrees 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 uses either 120 millimeters or 81 millimeters United States standard mortar tubes and provides an accuracy of 1 percent of range (for example: 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 2011 Accomplishments:*** Deployed ten systems to Afghanistan. Initiated Phase II to integrate the system with US Army Program of Record fire control software as a precursor to integration with sensors.			
Title: Marine Systems: Stiletto	2.479	-	-
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 (for example: 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 is 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 at the Combatant Craft Division of the Naval Surface Warfare Center (NSWC), Carderock in Norfolk, Virginia. ***FY 2011 Accomplishments:*** The Stiletto maritime experimentation platform project completed twelve (12) technology demonstrations in FY 2011, demonstrating the capabilities of: sensors; biometrics data links; human factors capabilities; Intelligence, Surveillance, and Reconnaissance (ISR) technologies; display systems; and, radars. Stiletto's operational experimentation in FY 2011 included participation in the Irregular Warfare Innovation Cell's Blue Dragon demonstration. Blue Dragon was a technology demonstration project between the National Maritime Intelligence Center, Naval Air Warfare Center Aircraft Division and NSWC's Combatant			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Craft Division. Blue Dragon featured Stiletto as a "mothership" in conjunction with a family of maritime ISR sensors and platforms to advance the state of the art in the Maritime Domain Awareness arena. Testing continues in support of the Combatant Command (COCOM), Services, and the Agency.			
Title: Griffin Cooperative Autonomy Demonstration Program ***Description:*** Griffin leveraged the Navy's Autonomous Maritime Navigation program to develop and install autonomous command and control systems and integrated the associated sensors on maritime platforms. The goal was 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 either interrogated the target autonomously with its sensors, or requested 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 2011 Accomplishments:*** The Griffin capability was exercised in Trident Warrior and successfully demonstrated the ability to autonomously and cooperatively patrol a maritime area of interest. Additionally, Griffin successfully demonstrated the ability to escort a high value unit and provide maritime blocking maneuvers when a threat was detected. A final report was promulgated to the Navy and other potential users of the technology.	-	-	-
Title: Prototype Rigid Aeroshell Variable Buoyancy (RAVB) Air Vehicle - Project Pelican ***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 ton-mile, 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	8.000	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
reduce need for intermodal transportation as cargo moves from origin to point of need, with corresponding reduction in delivery times. ***FY 2011 Accomplishments:*** During FY 2011 a successful test of the variable buoyancy system was completed and the contractor continued several subsystem design and integration tests and began overall vehicle system level integration. Periodic in-progress design reviews will continue.			
Title: Thunderstorm ***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) and Joint Task Force North (JTFN), along with DHS/Customs and Border Protection (CBP) locations as venues to conduct operational experiments with next generation detection, cueing, monitoring, tracking, and handoff capabilities against asymmetric target sets. In FY2011 the U.S. Southwest border was chosen as exercise venues because the operational environment is similar to deployed locations (i.e. Iraq and Afghanistan), and contains many of the same elements (i.e., non-state actors, ad hoc available to facilitate the development of government and industry capabilities to meet warfighter networks, and an adaptive enemy). The availability of CBP operational intelligence architectures coupled with a true interagency organizational construct made the Southwest border a realistic environment to vet capabilities prior to deployment to more stressing operational environments. In addition to providing relevant intelligence to support JIATF-South, and now JTFN operations, Thunderstorm also encourages greater cooperation with multi-agency/multinational partners, and identifies improvements in ISR concepts of operations that can be exported for other areas of responsibility to leverage. OSD has made Thunderstorm exercise data requirements. ***FY 2011 Accomplishments:*** Thunderstorm Spiral 4.0 was conducted in the CBP Tucson Sector from 1-15 May 2011. Operations were conducted from a tactical operations center, located in the CBP Information and Operations Control Center (IOCC) located in Tucson, AZ. Air and ground assets were tasked each day to perform two basic missions. First, each would be tasked to collect against actors performing scripted activity in Catalina State Park, AZ. This activity provided ground truth for each of the sensors. Following this, assets were tasked to fly along the border west of Nogales, AZ in support of real-world CBP activities. Sightings were relayed to CBP for their action. Next year, Spirals 4.1 and 5.0 will be conducted in the same operational area, once again supporting CBP counter-drug efforts.	3.178	-	-
Accomplishments/Planned Programs Subtotals	19.092	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Generic performance metrics applicable to Emerging Capabilities includes attainment of DoD Strategic Objective 4-2D: Speed Technology Transitions Focused on Warfighting Needs. The metric for this objective is to transition 30 percent of completing demonstration programs per year. During FY 2011 Emerging Capabilities achieved a transition rate of 100 percent for six (6) completing projects, and exceeded the 30 percent objective.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	24.978	18.621	15.110	-	15.110	15.708	16.358	16.882	17.197	Continuing	Continuing
P804: *Development Test & Evaluation*	23.425	18.621	15.110	-	15.110	15.708	16.358	16.882	17.197	Continuing	Continuing
P806: *Energy*	1.553	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Developmental Test and Evaluation (DT&E) 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 Under Secretary of Defense (Acquisition, Tecnology & Logistics), assesses the DT&E capabilities of the Military Departments and Department of Defense (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 FY 2011 for technical analysis and policy guidance for the DoD operational energy programs and initiatives, including institutionalizing energy in DoD's business processes (for example: Fully Burdened Cost of Fuel and the Energy Efficiency Key Performance Parameters (KPPs)). In FY 2012, funding will be re-allocated to a new DOEPP Program Element.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	18.688	15.805	16.053	-	16.053
Current President's Budget	24.978	18.621	15.110	-	15.110
Total Adjustments	6.290	2.816	-0.943	-	-0.943
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.689	-0.555			
• Other Program Adjustments	0.006	-	-0.943	-	-0.943
• FFRDC	-0.095	-0.129	-	-	-
• Economic Assumptions	-0.132	-	-	-	-
• Congressional Adjustments	7.200	3.500	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

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 $21.244 miilion from this Program Element (P805) for previous systems and software engineering efforts, has been transferred to a new Systems Engineering Program Element (0605142D8Z).

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P804: *Development Test & Evaluation*	23.425	18.621	15.110	-	15.110	15.708	16.358	16.882	17.197	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This project 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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: Developmental Test and Evaluation Accomplishments and Plans	23.425	18.621	15.110	-	15.110
FY 2011 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
-Initiated establishment of a Center of Excellence for Experimental Design and Analysis. -DASD DT&E named OSD lead for modeling and simulation. -Developed 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. -Continued hiring/staffing to support WSARA mission. -Refined internal processes to support acquisition decisions. -Refined the annual reporting process and develop the second Joint Annual Report to Congress. -Published 2 AOTRs on JASSM-ER and SM-6 prior to their entry into IOT&E. -Conducted review and approval of 44 TEMPs and 4 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. -Continued to promote the application of sound systems engineering, DT&E, and related technical disciplines across the Department's acquisition community and programs. -Monitored 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 Ten roles and responsibilities. -Refine internal processes to support acquisition decisions. -Refine annual reporting process and develop Joint Annual Report to Congress. -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.					
FY 2013 Base Plans: -Reassess Government and Contractor staff manning and resources and ability to meet Title Ten roles and responsibilities.					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
-Refine internal processes to support acquisition decisions. -Refine annual reporting process and develop Joint Annual Report to Congress. -Refine DT&E policies and methodologies addressing DT&E across all MDAP and Special Interest programs. -Publish formal AOTRs for ACAT ID and IC Programs under DT&E oversight prior to entry into IOT&E. -Conduct review and approval of all TEMPs 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 DT&E and related technical disciplines across the Department's acquisition community and programs. ***FY 2013 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	23.425	18.621	15.110	-	15.110

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P806: *Energy*	1.553	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program enables analyses to implement operational energy requirements as directed in the 2009 National Defense Authorization Act (NDAA)(10 USC 2925). Work conducted under this line focuses on research and development prioritization analysis related to identified operational energy capability gaps; campaign-level model modifications to allow simulated United States logistics forces to interact independently in analysis and planning; energy tool development for military requirements analysts related to operational energy gaps.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: Energy Initiatives	1.553	-	-	-	-
FY 2011 Accomplishments: Provide direct analytic support and model development support to the Director for Operational Energy Plans & Programs. Work conducted under this line included analysis to identify operational energy capability gaps and establish processes to address them; identification and collection of operational energy data to support development of metrics and establish an operational energy baseline for the Department; and analysis into tactical systems operational energy requirements and potential efficiencies. 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, and alternative force structure assessments.					
FY 2012 Plans: Efforts will be transferred to the new Operational Energy Capability Improvement program element, 0604055D8Z, in FY 2012.					
FY 2013 Base Plans: N/A					
FY 2013 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.553	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	5.919	4.432	4.454	-	4.454	4.508	4.596	4.565	4.647	Continuing	Continuing
101: *Budget and Program Assessments*	5.919	4.432	4.454	-	4.454	4.508	4.596	4.565	4.647	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program supports the Office of the Director, Cost Assessement & Program Evaluation (CAPE). 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 provides 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, and related force structure. Deliverables from this program will include reports, briefings, and analyses designed to illuminate critical issues facing the Department. Outcomes include recommendations for new modeling techniques, programmatic alternatives, and scenario development.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	6.099	4.528	6.284	-	6.284
Current President's Budget	5.919	4.432	4.454	-	4.454
Total Adjustments	-0.180	-0.096	-1.830	-	-1.830
• Congressional General Reductions	-	-0.030			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.129	-0.066			
• Reducing Reliance on DoD Service Support Contractors	-	-	-0.729	-	-0.729
• OSD Studies Reduction	-	-	-1.109	-	-1.109
• FFRDC (Section 8024(f))	-0.018	-	-	-	-
• Program Adjustments	-0.033	-	0.008	-	0.008

Change Summary Explanation

In FY 2013: Decrease of -0.0131 million to centralize and consolidate contracting services and realize contracting efficiencies to improve acquisition planning and oversight..

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
101: *Budget and Program Assessments*	5.919	4.432	4.454	-	4.454	4.508	4.596	4.565	4.647	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program supports the Office of the Director, Cost Assessement & Program Evaluation (CAPE). 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 provides 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, and related force structure. Deliverables from this program will include reports, briefings, and analyses designed to illuminate critical issues facing the Department. Outcomes include recommendations for new modeling techniques, programmatic alternatives, and scenario development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: OSD Support for Programming Budget, 0606100D8Z	5.919	4.432	4.454	-	4.454
FY 2011 Accomplishments: • 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.					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
• 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: • 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 2013 Base Plans: • Continue to expand mission and regional breadth of ISR-support studies, 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 2013 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
N/A					
Accomplishments/Planned Programs Subtotals	5.919	4.432	4.454	-	4.454

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	10.500	6.879	-	-	-	-	-	-	-	Continuing	Continuing
901: *Aviation Safety Technologies*	10.500	6.879	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

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-FY 2012 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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	10.900	6.925	-	-	-
Current President's Budget	10.500	6.879	-	-	-
Total Adjustments	-0.400	-0.046	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.301	-			
• Defense Efficiency -Service Support Contract	-0.099	-	-	-	-
• Other Program Adjustments	-	-0.046	-	-	-

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: 901 Aviation Safety Technologies	10.500	6.879	-
FY 2011 Accomplishments: • 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	10.500	6.879	-

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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*

F. Performance Metrics

- Class A aviation accident rates. Number of Class A aviation accidents, (resulting in damages of $2 million or more; aircraft destroyed; and/or fatality or permanent disability), per 100,000 flying hours.
- Number of destroyed aircraft.
- Number of aviation fatalities.
- A 75% reduction goal was assessed against a FY 2002 baseline.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*				R-1 ITEM NOMENCLATURE PE 0203345D8Z: *Defense Operations Security Initiative*							
COST ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	-	1.721	2.637	-	2.637	5.340	7.167	8.736	8.910	Continuing	Continuing
345: *Defense Operations Security Initiative*	-	1.721	2.637	-	2.637	5.340	7.167	8.736	8.910	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Defense Operations Security (OPSEC) Initiative enhancement consists of six components:

1. Force Evaluation - will focus on billets, personnel identifications and tracking, allocation, and operational employment.
2. Training and Education - will focus on exercise support and formal education curricula review and development.
3. 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. Technology and Tools Research, Testing, and Development - will identify emerging technologies and tools consisting of physical, technical, and administrative means.
5. 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. Governance - will consist of the development and oversight of infrastructure, policy, authorities, and warfighter advocacy across the Joint community and the Defense support agencies.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0203345D8Z: *Defense Operations Security Initiative*

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	1.777	2.925	-	2.925
Current President's Budget	-	1.721	2.637	-	2.637
Total Adjustments	-	-0.056	-0.288	-	-0.288
• Congressional General Reductions	-	-0.012			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-0.044			
• Department adjustment	-	-	-0.288	-	-0.288

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Defense Operations Security Initiative (DOSI)	-	1.721	2.637
FY 2011 Accomplishments: N/A			
FY 2012 Plans: -Initiate plans and research projects addressing DOSI's six components (i.e. Force Evaluation, Training and Education, Intelligence Support, Technology and Tools Research, Measures and Countermeasures Assessments, and Governance). -Develop a tailored DoD OPSEC training course focused on integrating OPSEC with warfighter operations. -Plan and develop strategy to refocus OPSEC as an operations function designed to reduce availability of critical information and indicators to adversary collection capabilities in order to enhance warfighter operations.			
FY 2013 Plans: Continue research projects addressing DOSI's six components (i.e. Force Evaluation, Training and Education, Intelligence Support, Technology and Tools Research, Measures and Countermeasures Assessments, and Governance).			
Accomplishments/Planned Programs Subtotals	-	1.721	2.637

D. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0203345D8Z: *Defense Operations Security Initiative*

E. Acquisition Strategy

The Defense Operations Security Initiative (DOSI) acquisition, management, and contracting strategy follows guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. DOSI efforts will acquire and sustain capabilities, systems, tools, products, and services through an acquisition process that is responsive and responsible to internal and external stakeholders.

F. 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 - Enable the warfighter to speed up processes faster than current capabilities.
Money - 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 - Enable the warfighter to create an evironment that is closer to the real world environment than current capabilities allow.
Fidelity - Ensure unity of efforts throughout the IO, Cyber, and IOI Communities.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 Capabilities*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	30.604	11.771	-	-	-	-	-	-	-	Continuing	Continuing
001: *IO Range*	7.780	8.700	-	-	-	-	-	-	-	Continuing	Continuing
002: *IO Capability Activities*	17.260	3.071	-	-	-	-	-	-	-	Continuing	Continuing
003: *VisIOn*	5.564	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program is 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. This program enables 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 this program 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.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	31.500	12.209	11.630	-	11.630
Current President's Budget	30.604	11.771	-	-	-
Total Adjustments	-0.896	-0.438	-11.630	-	-11.630
• Congressional General Reductions	-	-0.081			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.610	-0.357			
• Department adjustment	-0.009	-	-11.630	-	-11.630
• Congressional adjustment	-0.277	-	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 Capabilities*

Change Summary Explanation

Funds were realigned to Joint Staff due to JFCOM closure.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 Capabilities*	PROJECT 001: *IO Range*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
001: *IO Range*	7.780	8.700	-	-	-	-	-	-	-	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 2011	FY 2012	FY 2013
Title: IO Range	7.780	8.700	-
FY 2011 Accomplishments: - Developed, tested and evaluated IO Range concepts during events based on a list of prioritized requirements and available funding. - Evolved full spectrum IO and Cyber towards full range of capabilities to include Computer Network Operations, EW, Deception, and other related targets.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 Capabilities*	PROJECT 001: *IO Range*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
- Implemented IO and Cyber capabilities at field 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. - Move toward full spectrum IO and Cyber and evolve with the addition of a more robust set of targets. - Implementation of IO and Cyber capabilities at field 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 2013 Plans:*** N/A			
Accomplishments/Planned Programs Subtotals	7.780	8.700	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The IO Range continues to deploy additional nodes. The acquisition, management, and contracting strategy follows guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. Management uses project management tools and meetings to ensure delivery of stated capabilities performance criteria.

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 enable the warfighter to speed up processes faster than current capabilities allow.
• Money – Will enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities will allow.
• Realism – Will enable the warfighter to create an environment that is closer to the real world environment than current capabilities will allow.
• Fidelity – Will ensure unity of efforts throughout the IO, Cyber, and IOI Communities.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 Capabilities*	PROJECT 002: *IO Capability Activities*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
002: *IO Capability Activities*	17.260	3.071	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This project supports new and cutting-edge operational activities that address the issues of rapidly changing technology and the complex inter-relationships associated with data exchange and analysis. This includes support of data analysis tools for assessment of machine-based and electromagnetic spectrum-based information transmittal.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: IO Capability Activities	17.260	3.071	-
FY 2011 Accomplishments: - Improved packing and collaboration of data analysis and tracking. - Transitioned technology projects. - Pursued emergent, cutting-edge IO, cyber, and IOI technologies to meet warfighter requirements.			
FY 2012 Plans: Support development of IO, cyber and IOI cutting-edge capabilities that support COCOMs and Services executing operations during current and future conflicts.			
FY 2013 Plans: N/A			
Accomplishments/Planned Programs Subtotals	17.260	3.071	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

IO Capability Activities acquisition, management, and contracting strategy follows guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. Management uses project management tools and meetings to ensure delivery of stated capabilities performance criteria.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 Capabilities*	PROJECT 002: *IO Capability Activities*

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 – Effort will enable the warfighter to speed up processes faster than current capabilities allow.
- Money – Effort will enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities will allow.
- Realism – Effort will enable the warfighter to create an environment that is closer to the real world environment than current capabilities will allow.
- Fidelity – Effort will ensure unity of efforts throughout the IO, Cyber, and IOI Communities.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 Capabilities*	PROJECT 003: *VisIOn*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
003: *VisIOn*	5.564	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Virtual Support for the Information Operations Environment (VisIOn) project was the DoD primary Joint IO/Cyber decision support system for analysis, planning, and assessment of IO and Cyber operations. Components of the VIsIOn project will be transitioned to the Defense Intelligence Information Enterprise Framework.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: VIsIOn	5.564	-	-
FY 2011 Accomplishments: Transitioned components of the Virtual Integrated Support for the Information Operations Environment (VIsIOn) to the Defense Intelligence Information Enterprise Framework.			
FY 2012 Plans: N/A			
FY 2013 Plans: N/A			
Accomplishments/Planned Programs Subtotals	5.564	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The VIsIOn acquisition, management, and contracting strategy follows guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. IOII efforts acquire and sustain capabilities, systems, tools, products, and services through an acquisition process that is responsive and responsible to internal and external customers and stakeholders.

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 – Effort will enable the warfighter to speed up processes faster than current capabilities allow.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 Capabilities*	PROJECT 003: *VisIOn*

• Money – Effort will enable the warfighter to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities will allow.
• Realism – Effort will enable the warfighter to create an environment that is closer to the real world environment than current capabilities will allow.
• Fidelity – Effort will ensure unity of efforts throughout the IO, Cyber, and IOI Communities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	4.978	4.147	-	-	-	-	-	-	-	Continuing	Continuing
169: *IT Rapid Acquisition*	4.978	4.147	-	-	-	-	-	-	-	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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	5.135	4.288	4.270	-	4.270
Current President's Budget	4.978	4.147	-	-	-
Total Adjustments	-0.157	-0.141	-4.270	-	-4.270
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.157	-	-	-	-
• FFRDC Reduction	-	-0.029	-	-	-
• SBIR Reduction	-	-0.099	-	-	-
• STTR Reduction	-	-0.013	-	-	-
• Efficiency Reduction	-	-	-4.270	-	-4.270

Change Summary Explanation

FY 2011: Includes Department withhold for Secretary of Defense Efficiencies (Studies Contract Efficiency -0.426 million, Service Support Contract Efficiency -0.130 million), Program adjustment -0.157 million.
FY 2012: FFRDC reduction -0.029 million, SBIR reduction -0.099 million, STTR reduction -0.013 million.
FY 2013: This program will terminate in FY2013 as part of the Secretary of Defense Efficiency reductions.

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.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: IT Rapid Acquisition Plans and Accomplishments	4.978	4.147	-
FY 2011 Accomplishments: • Provided oversight and guidance to DISA in developing and refining the NIPRNet/SIPRNet infrastructures to achieve full IPv6 capability. • Continued development of the IT Infrastructure Reference Architecture. • Continued development of the Theater Synchronization Plans (TSP) that builds upon the Defense ITIL Catalog.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
• Collaborated with the National Security Agency (NSA) and the Intelligence Community (IC) to obtain IPv6 Information Assurance (IA) and security guidance documents. • Monitored the DoD IPv6 Address Plan implementation to allocate IPv6 address space to DoD Components and the Director of National Intelligence (DNI). • Monitored DoD UC and IPv6 implementation funding options. • Facilitated IPv6 implementation collaboration efforts between the DoD and the DNI, and participated in IC-DoD IPv6 Collaboration Team and IC Network Integration Steering Group (NISG) meetings. •Collaborated with DoD and Federal agencies on IPv6 Test and Evaluation (T&E) and standards issues; and collaborated with the National Institute for Standards and Technology (NIST), reference DoD and NIST IPv6 test and certification processes. • Provided oversight for issuance of the DoD Unified Capabilities Requirements (UCR) 2008, Change 2 document. • Addressed the U.S. Government (USG) Office of Management and Budget (OMB) FY 2012 and FY 2014 requirements for all Federal agencies to expedite operational deployment and use of IPv6; submitted to OMB the IPv6 Transition Manager Checklist response and consolidated DoD inventory of public-facing web sites. • Governed DoD UC/IPv6 implementation through DoD CIO Executive Board (EB) forums, UC Steering Group (UC SG), UC Industry Advisory Council (UC IAC), IPv6 Stakeholders Working Group (ISWG), and IC NISG. • Continued 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. • Expanded the development of the Theater Synchronization Plans (TSP) to support additional COCOMs. • Produced CUI category position in concert with USDI for inclusion in emerging Federal standards and policies. • Produced 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. • Released Enhanced Information Support Plan (EISP) Enterprise Service Version (ESV). o Allows automatic import of authoritative architecture data to increase accuracy of collected information. o Allows online collaboration between interrelated Program Offices to ensure better coordination in the development of interoperable systems. • Updated process for I&S risk analysis within the EISP ESV, reducing burden on PMs by allowing for greater reuse of data • Integrated with DISA's PM Portal to allow for streamlined online reviews via the Interoperability Assessment Module (IAM) • Began creation of DoD CIO analytic portal o Developing DoD CIO program health assessment dashboard o Developing user defined queries, visualizations, and reports			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
• Extracted, transformed, and loaded legacy I&S data into the EISP database to allow DoD CIO analysts the ability to query current and legacy I&S risk and issue data to conduct trend analysis			
FY 2012 Plans:			
• Continue to provide oversight and guidance to DISA in refining the NIPRNet/SIPRNet infrastructures to achieve full IPv6 capability.			
• Collaborate with NSA and the IC to obtain IPv6 security device requirements and guidance.			
• 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.			
• Collaborate with DoD and Federal agencies on IPv6 T&E and standards issues, as well as DoD and NIST IPv6 certification processes.			
• Provide oversight for implementation of the DoD UCR 2008, Change 2 document by DoD Components and the vendor community, and collaborate with DISA on the draft DoD UCR 2008, Change 3 document.			
• Implement UC DoDI 8100.04 to instantiate UC policy, responsibilities, procedures, and processes throughout DoD.			
• Implement the DoD UC MP to establish UC planning guidelines for the DoD Components.			
• Continue to govern DoD UC/IPv6 implementation through DoD CIO EB forums, UC SG, UC IAC, ISWG, and IC NISG.			
• Continue industry and government outreach efforts to facilitate development and implementation of DoD UC policy and processes.			
• Continue to oversee development of the IT Infrastructure Reference Architecture.			
• 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 requirement to expedite operational deployment and use of IPv6, facilitate meetings of the DoD ISWG to discuss way-ahead for addressing the OMB FY 2014 requirement, and continue to provide oversight and guidance to DoD Components in completing their actions and milestones, as defined in the DoD IPv6 Implementation Guidance & Policy Memo (signed 7 March 2011 by DoD CIO), to address OMB IPv6 requirements.			
• Oversee the implementation of the ITIORA for the Joint bases and expand the IT Infrastructure Reference Architecture to support installations across DoD.			
• Continue to oversee the Theater Synchronization Plans (TSP) and provide support to additional COCOMs focusing in on PACOM.			
• Produce DoD CUI Transition Plan based upon NARA policy and emerging guidance.			
• 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.			
• Create web services to import architecture data directly from Service Architecture repositories and the EISP ESV.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
• Create web services to exchange acquisition data with Joint Staff's CDTM tool for JCIDS information. • Create an analytic portal that allows user-defined queries of authoritative data. o Create DoD CIO analytic dashboards to visualize and evaluate programs and portfolios and to perform program and portfolio health assessments. o Allow users to create visualizations of data, filtered by different criteria (e.g, I&S risks, program health data). o Create user defined reports and outputs, focusing on data requirements of individual analysts (e.g. IPv6 compliance reports, Spectrum reports). • Create online, user-driven training on the use of EISP ESV. • Create SIPRNET version of EISP Enterprise Service Version (as desired). ***FY 2013 Plans:*** N/A			
Accomplishments/Planned Programs Subtotals	4.978	4.147	-

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	21.079	15.002	16.041	-	16.041	15.591	15.398	14.537	14.833	Continuing	Continuing
001: *Cyber and Intelligence Operations Integration*	-	15.002	16.041	-	16.041	15.591	15.398	14.537	14.833	Continuing	Continuing
002: *Human Factors Analysis*	1.505	-	-	-	-	-	-	-	-	Continuing	Continuing
003: *IO Intelligence Integration*	13.194	-	-	-	-	-	-	-	-	Continuing	Continuing
004: *IO Indications and Warning*	6.380	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

- The program element encompasses those activities pertaining to operations support and intelligence integration, cyber technology innovation, intelligence and related activities in cyberspace, and strategic assessments.
- This program is a part of the overall Department effort to implement best practices and DoD doctrinal processes which require shared responsibility and close synchronization amongst intelligence, operations and associated planning elements. Joint Warfighter requirements are driving the need for the integration of intelligence and operations capabilities/capacities.
- The objective of this program is the rapid development and institutionalization, by leveraging research and development investments, of new cyber intelligence and Intelligence Operations Integration (IOI) technology, concepts and capabilities for Joint and Coalition Warfighters.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	21.272	15.002	15.364	-	15.364
Current President's Budget	21.079	15.002	16.041	-	16.041
Total Adjustments	-0.193	-	0.677	-	0.677
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department adjustment	-0.006	-	0.677	-	0.677
• Congressional adjustment	-0.187	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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: *Cyber and Intelligence Operations Integration*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
001: *Cyber and Intelligence Operations Integration*	-	15.002	16.041	-	16.041	15.591	15.398	14.537	14.833	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This project will integrate intelligence activities in the information environment and cyberspace with conventional and asymmetric military operations; furthermore, they will provide new technologies, methodologies and processes to increase the integration and delivery of actionable intelligence from the Defense Intelligence Enterprise to the Warfighter.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Cyber and Intelligence Operations Integration	-	15.002	16.041
FY 2011 Accomplishments: N/A			
FY 2012 Plans: - Develop cyber and IOI capabilities and capacity to support COCOMs and Services to execute cyber and asymmetric operations activities. - Support the development of critical and emerging cyber, cyber intelligence, and IOI technologies that support warfighter needs.			
FY 2013 Plans: - Continue to develop cyber and IOI capabilities and capacity to support COCOMs and Services to execute cyber and asymmetric operations activities. - Continue to support the development of critical and emerging cyber, cyber intelligence, and IOI technologies that support warfighter needs.			
Accomplishments/Planned Programs Subtotals	-	15.002	16.041

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The Cyber and Intelligence Operations Integration acquisition, management, and contracting strategy follows guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. Management uses project management tools and meetings to ensure delivery of stated capabilities performance criteria.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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: *Cyber and Intelligence Operations Integration*

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 – Enable the warfighter to speed up processes faster than current capabilities allow.
- Money – 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 – Enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow.
- Fidelity – Ensure unity of efforts throughout the IO, Cyber, and IOI Communities.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
002: *Human Factors Analysis*	1.505	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Addressed the integration of the full range of human factors analytic processes and intelligence necessary to support the planning and execution of full-spectrum Information Operations. These analytic processes included psychological, cultural, and behavioral factors as well as the organizational dynamics shaping decision processes, the information flows feeding decision-making, and their associated strengths and vulnerabilities. This multi-source information was fused to provide integrated assessments to support DoD, Interagency, and Coalition partners.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Human Factors Analysis	1.505	-	-
FY 2011 Accomplishments: - Provided analysis and planning, intelligence products, methodologies, and specialized databases. - Developed advanced methodologies, techniques, and analytical tools for applying Human Factor Analysis to specific intelligence requirements.			
FY 2012 Plans: N/A			
FY 2013 Plans: N/A			
Accomplishments/Planned Programs Subtotals	1.505	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The Human Factors Analysis acquisition, management, and contracting strategy follows guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. Management uses project management tools and meetings to ensure delivery of stated capabilities performance criteria.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 – Enable the warfighter to speed up processes faster than current capabilities allow.
- Money – 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 – Enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow.
- Fidelity – Ensure unity of efforts throughout the IO, Cyber, and IOI Communities.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
003: *IO Intelligence Integration*	13.194	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Provided commanders, COCOMs, supporting organizations, defense agencies, coalition partners, and other government agencies with a collaborative construct including methodologies for intelligence operations integration (IOI), Joint Intelligence Preparation of the Operational Environment (JIPOE), target development, task characterization, task synchronization, and assessment in support of courses of action (COA) development and post-execution assessment of deliberate and crisis action planning efforts.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: IO Intelligence Integration	13.194	-	-
FY 2011 Accomplishments: Transitioned components of the Virtual Integrated Support for the Information Operations Environment to the Defense Intelligence Information Enterprise Framework.			
FY 2012 Plans: N/A			
FY 2013 Plans: N/A			
Accomplishments/Planned Programs Subtotals	13.194	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The intelligence operations integration (IOI) and cyber acquisition, management, and contracting strategy follows guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. IOI efforts acquire and sustain capabilities, systems, tools, products, and services through an acquisition process that is responsive and responsible to internal and external customers and stakeholders.

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 2013 Office of Secretary Of Defense		DATE: February 2012
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*

- Time – Enable the warfighter to speed up processes faster than current capabilities.
- Money – 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 – Enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow.
- Fidelity – Ensure a unity of efforts throughout the IO, Cyber, and IOI Communities.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
004: *IO Indications and Warning*	6.380	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This project supported specialized electronic support capabilities supporting fleet, air, operational forces, COCOM Commanders and the Intelligence Community. This included development and testing of specialized hardware and automated digital processor systems for fielding into existing operational architectures.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Information Operations Indications and Warning	6.380	-	-
FY 2011 Accomplishments: Continued system development, installation, and testing of capabilities and began transition of efforts into operational forces.			
FY 2012 Plans: N/A			
FY 2013 Plans: N/A			
Accomplishments/Planned Programs Subtotals	6.380	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

The Information Operations Indications and Warning acquisition, management, and contracting strategy follows guidance outlined in DoD 5000 series directives, Federal Acquisition Regulation (FAR), and FAR supplement policies and procedures. Management uses project management tools and meetings to ensure delivery of stated capabilities performance criteria.

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 – Enable the warfighter to speed up processes faster than current capabilities allow.
- Money – 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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

• Realism – Enable the warfighter to create an environment that is closer to the real world environment than current capabilities allow.
• Fidelity – Ensure unity of efforts throughout the IO, Cyber, and IOI Communities.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	0.838	0.861	-	-	-	-	-	-	-	Continuing	Continuing
400: *Warfighting and Intelligence-Related Support*	0.838	0.861	-	-	-	-	-	-	-	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. Beginning with FY 2013, funds were realigned to O&M for proper execution.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	0.845	0.861	-	-	-
Current President's Budget	0.838	0.861	-	-	-
Total Adjustments	-0.007	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Congressional adjustment	-0.007	-	-	-	-

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Warfighting and Intelligence-Related Support	0.838	0.861	-
FY 2011 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 2012 Plans:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
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	0.838	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 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	47.050	37.255	77.475	-	77.475	59.060	62.374	62.653	63.512	Continuing	Continuing
758: *Joint National Training Capability (JNTC)*	17.921	11.559	24.381	-	24.381	22.711	25.256	27.908	28.767	Continuing	Continuing
759: *Joint Innovative Training Methods & Tools (JITMT)*	1.994	-	-	-	-	-	-	-	-	Continuing	Continuing
761: *Joint Simulations Systems (JSS)*	7.208	-	3.017	-	3.017	3.119	3.243	3.395	3.395	Continuing	Continuing
764: *Irregular Warfare (IW)*	7.522	11.263	-	-	-	-	-	-	-	Continuing	Continuing
769: *Joint Knowledge Development & Distribution Capability (JKDDC)*	2.194	1.207	4.656	-	4.656	5.292	4.901	5.378	5.378	Continuing	Continuing
770: *U.S. Forces Korea Training and Exercise Support*	10.211	7.339	6.497	-	6.497	6.451	4.483	1.378	1.378	Continuing	Continuing
754: *Immersive Simulation*	-	-	32.900	-	32.900	15.000	17.415	17.127	17.127	Continuing	Continuing
701: *Air Force JNTC*	-	2.355	2.041	-	2.041	2.307	2.716	2.794	2.794	Continuing	Continuing
772: *Navy JNTC*	-	3.532	3.983	-	3.983	4.180	4.360	4.673	4.673	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 adapting to new and future realities. 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 Simulation Systems (JSS)
- Joint Knowledge Development & Distribution Capability (JKDDC)
- U.S. Forces Korea Training & Exercise Support (USFK)
- Immersive Trainer
- Air Force JNTC
- Navy JNTC

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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)*

JNTC: 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 from other Services and locations which are 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.

JSS: This effort provides warfighters with Joint Simulations and Tools that enhance and enable Joint training across Services, COCOMs, Agencies and Coalition partners. These Joint Simulations and Tools are part of an overall Joint Live, Virtual, and Constructive (JLVC) baseline of 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 Joint Simulations and Tools provided by JSS are critical enablers that support the delivery of trained, capable, and interoperable Joint Forces.

JKDDC: 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 Joint Knowledge Online (JKO) Stakeholder (COCOMs, Services, and Combat Support Agencies) prioritized training requirements. JKDDC JKO 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. JKDDC JKO technology initiatives principally include Virtual Cultural Awareness Training (VCAT) web-based gaming, Small Group Scenario Trainer (SGST), and mobile courseware training devices. These capabilities facilitate the training and preparation of tens of thousands of military and civilian personnel deploying to COCOM theaters of operation prior to serving in their assigned Combined/Joint Task Force (C/JTF) billets. Specifically, VCAT supports one of the top identified training shortcomings of returning warriors from United States Central Command (USCENTCOM) based C/JTFs (cultural awareness training). C/JTF ‘battle staffs’ will be adequately trained, as individuals and the staffs collectively, based on SGST development and implementation throughout the joint training enterprise. JKO mobile courseware training device development facilitates the global distribution of web-based joint training content on portable, hand-held platforms for joint warriors. The future learning environment will provide training and learning to promote adaptability and agility in the workforce with the capability to tailor and adapt instructional material to fit the learner's strengths and weaknesses, learning style, and level of proficiency.

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. This simulation system is also interoperable with the Republic of Korea developed Korean Simulation System. This solution will be capable of interoperating in a common battle space 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: This program supports a broader national effort to advance and integrate emerging technologies to increase the effectiveness of training in dismounted, small-unit operations in the contemporary operating environment. Today’s dismounted forces when placed in a complex, culturally rich environment require a training capability that challenges their mental agility as they are required to rapidly adapt in a dynamic environment which ranges from conventional battles

to irregular warfare (IW). In close coordination with the Services, the Immersive Trainer imitative will create a realistic virtual environment to train small military units with the required level of complexity while creating sensory overload and decision-making under extreme stress. Additionally, the Immersive Trainer will capture detailed data during complex scenarios to facilitate in-depth debrief and capture lessons learned for training audiences. To date, this detailed debrief capability has been limited to operators of high-end platforms like fighter aircraft. Now the infantry squad will be provided a comparable capability as aircraft crew to conduct mission rehearsals and after action reviews before and after critical missions. This capability for our dismounted general purpose and special operations forces is vital to saving lives and ensuring effective and ethical small unit operations in the future. The immersive trainer also is a key component in development of small unit leaders by allowing them to train in a realistic environment which can be altered to stress different learning objectives.

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 foundation supporting all JNTC operations.

Navy JNTC: Supports SECDEF Transformation of DoD training and Joint National Training Capability. These funds enable Navy in developing unique maritime capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Navy continues to develop and integrated joint training technologies that 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 all T2 capable systems, developing cross-domain architectures for US and Coalition Forces as well as ensure sister service modeling/simulation and instrumentation efforts follow a common unified standard.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	92.253	59.958	78.677	-	78.677
Current President's Budget	47.050	37.255	77.475	-	77.475
Total Adjustments	-45.203	-22.703	-1.202	-	-1.202
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-21.868			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.196	-0.581			
• Realignment of Funds to Support Higher Priorities	-	-	-1.901	-	-1.901
• General Program Reductions	-44.007	-0.254	-0.210	-	-0.210
• General Program Increases	-	-	0.909	-	0.909

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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)*

Change Summary Explanation

1. As part of the SECDEFs efficiency cuts, the Joint Irregular Warfare training capability research and development was eliminated. Research and development for Joint IW training is adequately addressed within the Services budgets.

2. The Joint Simulation System increased funding provides minimal required enhancements to Joint simulations and tools. This critical enabler enables a relevant training environment for Joint training of Combatant Commands, Joint Task Forces, and Service Functional Components.

3. Increased funding for the JNTC is attributed to the rebalancing of priorities and focus of delivering Joint training enterprise enablers that support Joint training across the Services and Combatant Commands. This increased funding also addresses the ability to create Joint training environments that must respond to emerging threats and emerging warfighter training requirements such as Cyber, Integrated Air and Missile Defense, and Cross Domain Information Sharing.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
758: *Joint National Training Capability (JNTC)*	17.921	11.559	24.381	-	24.381	22.711	25.256	27.908	28.767	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

DoD directed USJFCOM to establish the JNTC research and development program to develop future training concepts and capabilities. The mission is to develop a robust Joint training environment that represents the complexities of the operational environment through the seamless integration of Live, Virtual, and Constructive (LVC) elements. 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 Combatant Commanders Exercise and Engagement Training and Transformation (CE2T2) vision.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: P758 Joint National Training Center (JNTC)	17.921	11.559	24.381

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 2011 Accomplishments:

• Completed initial and full operational capability of United States portion of Afghanistan Mission Network Training Federation (AMN-TF). The AMN is the primary coalition, Command, Control, Communications and Computers Intelligence, Surveillance,

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
and Reconnaissance (C5ISR) network in Afghanistan for all ISAF forces and operations. It consists of the ISAF SECRET network as the core with connections to national extensions from numerous country participants. The U.S. portion of the AMN is called Combined Enterprise Regional Information Exchange System-International Security Assistance Force (CX_I). AMN-TF provides a common network for coalition forces to train in an environment that accurately replicates the operational environment to which they will deploy. • Demonstrated (first use case) extension of the AMN-TF to trusted mission partner, Australia, in preparation for a persistent on-demand connection. The persistent connectivity will be used to facilitate coalition training and mission rehearsal exercises with Australia prior to deployment. • Initiated Joint Live Virtual Constructive/Cross Domain Information Sharing Synchronization (JLVC/CDS) Project. The JLVC federation is an integrated training capability that generates a realistic simulation of the real world in order to facilitate a live training audience's accomplishment of joint training objectives. It provides an integrated and coherent LVC training environment that includes appropriate joint context, and allows global training and mission rehearsal in support of specific joint requirements. Each JLVC software update invalidated the current CDS and delays implementation of enhancements. This project with provide a certified/accredited CDS within 30 day of a JLVC release. • Developed a strategy and roadmap for the incorporation of Internet Protocol version 6 into the Joint Trainer Toolkit. • Initiated redesign of Australia, Canada, Great Britain and United States (ACGU) Training Enclave. ACGU provides a training network, which does not contain a network guard, for trusted mission partners to conduct bi-lateral and multi-lateral training. Redesign will equally share responsibilities, capabilities and resources among trusted mission partners. • Continued the communication technologies research and develop initiative that will facilitate the distribution of mixed reality training around the globe. The technologies will facilitate home-station operations vice having to relocate operators to remote locations and will ensure warfighter's pre-deployment training would mirror real-world operations as closely as possible. • Developed and demonstrated an initial JTEN Expeditionary (JTEN-X) prototype capability using existing commercial and Government off the shelf (GOTS) capabilities for remote areas using cellular technologies. Project completed and assessed data and bandwidth limitations on existing G3 Cellular technologies that are free of any fixed communication infrastructure. This will facilitate Joint training at home-stations and/or remote locations. • Researched and engineered migration of current JTEN to JTEN 2.0 capability. The JTEN 2.0 is essential in order to continue operational capability of a distributed training network as the legacy JTEN technology is sunset by DISA and commercial vendors. This migration also provides alignment of the JTEN 2.0 within DISA's Global Information (GIG) and enables future transition of the Joint training environment through a GIG service. • Conducted developmental testing of the JTEN 2.0 within at select distributed nodes across CONUS sites in order to validate design parameters and performance metrics. Leveraged JTEN Test bed infrastructure to produce, test, and evaluate new technologies and methods to implement leading edge training capabilities in the areas of Irregular Warfare, non-lethal/non-kinetic, Chemical Biological Radiological Nuclear Environments (CBRNEs), and Intel integration into the only all service Live, Virtual, and			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Constructive federation of service models to support mission rehearsal and joint training to prepare deploying forces for operations at the tactical, operational, and strategic levels of war. • Completed Phase II development, and integration of the Operational Forces (OPFOR) C2 network at Naval Air Station (NAS) Fallon Range Complex which will provide a threat Integrated Air Defense System and enhance training environment realism. Initiated Phase III development. • Completed software/hardware capabilities for the display of Link-16 data on the Large Area Training Range displays. • Completed the Battlefield Communications Simulation System (BCSS) increment one capability enhancements requested by the Air Force. • Completed the Multi-Spectral Threat System Remote C2 and durability upgrade development, and full ERP and reactive electronic attack response into existing systems. • Completed the Massachusetts Institute of Technologies (MIT) Lincoln Laboratory “Lariat” Information Operation Traffic Generation tool development enhancements in support of Cyber / IO training. • Completed Network Electronic Attack Simulator coding development and installation. • Initiated the development of Target Data Fusion Engine/ Adaptable Range Exercise System for incorporation into the 9C2 OPFOR Network at Pacific Alaska Range Complex (PARC) and NAS Fallon. • Initiated the development and upgrade to the Multiple Integrated Laser Engagement System (MILES) threat weapon system Pk/ Ph data. • Initiated Phase 1 Navy Fury III training system development in support of Joint EW training requirements. • Developed and released block 4 of an enterprise solution to enable near-real time and post event assessment of the Joint Warfighters performance;successfully developed, tested, and integrated version 2.0 of the Joint After Action Review Resource Library (JAAR-RL) into the JLVC constructive federation. • Continued to integrate the Marine Air Ground Task Force Tactical Warfare Simulation into the JLVC federation. • Developed draft Initial Capabilities Document (ICD) to document All Things Missile (ATM) Joint training capability requirements. This ICD is serving as a baseline document to focus Integrated Air and Missile Defense training capability investments across the Combatant Commands and Services. • 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 two training systems for Joint interoperability with and integration into the Joint Training Enterprise thereby reducing future costs and exercise preparation time. • Completed updates of the System Certification Nomination Form and the System Certification Scorecard used as part of the System Certification process to increase efficiency and currency. • Effectively archived all System Certification documents and shut down system certification efforts at direction of the command.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Developed and released JTDS version 2.0 (addition of a weather capability), a rapid scenario generation capability for the Joint training environment to 3 Joint training sites. • Developed 30 simulation terrain databases used for a wide variety of model and simulations in support of joint training events and exercises enabling a usable, standardized, lower cost terrain database. • Developed and documented useful joint standards for integrating Service/Special Operations Command (SOCOM) virtual simulators into the Joint training environment. • Integrated National level intelligence capabilities into the Joint training environment by integrating the NSA's JCMS into the JLVC federation. • Developed system interfaces for machine-to-machine information exchanges for on-demand data access by Web Service connections to external DoD systems of record. • Completed automation for data input, key word search, and report generation functions related to the full life-cycle of the J7 Training Development process. • Implemented automated web services to query Joint Task data through a Service Oriented Architecture approaches for Joint training information applications and information resources that interface to the external systems, services, or data sources. This provides real time cross reference to the authoritative Joint Task definitions for planning and training development. • Researched and lab tested the GOTS product entitled, Distributed Training Network Guard. The product is one of the candidate initiatives that address Cross Domain Information Sharing shortfalls inherent in the Joint training environment.			
FY 2012 Plans: • Further develop AMN-TF capabilities by taking advantage of technology advances and incorporate lessons learned into development of a Future Mission Network (FMN)-TF, which will provide similar capabilities as AMN-TF to any coalition mission. • Accomplish second use case for extension of CX-I TF into Australia. • Complete redesign and implementation of ACGU Training Enclave. • Demonstrate proof of concept on Navy requirements for JCW/Navy/Air Force Cross Domain Solution Pilot Program, a consolidation of requirements necessary to achieve an enterprise and eliminate artificial boundaries between disperate organizations with similar requirements. Redirect focus to Air Force requirements. • Continue JTEN Test Bed systems certification, product evaluation, JTEN problem replication and troubleshooting, to be conducted off the production JTEN. This significantly mitigates risk to the operational JTEN, permits simultaneous test & evaluation without impact to JTEN events, and permits fielding capabilities at a much quicker rate than waiting for windows of availability on the production JTEN. • Complete communication technologies research and develop initiative that will facilitate the distribution of mixed reality training around the globe. This 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Continue development of the JAAR-RL to improve stability and usability in order to enhance near-real time and post event assessment of Joint Warfighters performance. Begin development of web-based user interface and JAAR-RL as an enterprise service via cloud computing prototype. • Complete integration of the Marine Air Ground Task Force Tactical Warfare Simulation into the JLVC federation. Begin research and testing of a prototype solution for a web services framework that will enable seamless information exchange between J7 information systems and NCES information services available on the GIG. • Develop an irregular warfare capability that models civilian population and provides cause and effect linkage. • Develop a rapid synthetic civilian environment capability to support service level tactical gaming. • Complete the All Things Missile (ATM) initial capabilities document and establish the initial operational capability by fielding the initial prototype increment of a scalable, dynamic, low cost and overhead technical solution in support of missile mission training from the strategic to tactical level for COCOM and Service stakeholders. • Complete software modification of the NSA's JCMS system in order to integrate with the JLVC training federation. This will deliver when completely integrated the full capability of the NSA into the Joint 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. • Continue research and development efforts to mitigate or resolve identified Joint training cross-domain information sharing issues and release increment 1 of a cross domain enterprise solution for Joint training environment.			
FY 2013 Plans: • Accomplish persistent connectivity of CX-I TF with Australia and explore feasibility of extending CX-I TF to other trusted mission partners. • Establish a proof of concept for development of FMN-TF. • Demonstrate proof of concept on Air Force requirements for JCW/Navy/Air Force Cross Domain Solution Pilot Program. • Continue Next Generation JTEN research, integration, and fielding in support of Joint National Training Capability (JNTC) road map and Federal Inter-Agency requirements. • Continue JTEN Test Bed systems certification, product evaluation, JTEN problem replication and troubleshooting, to be conducted off the production JTEN. This significantly mitigates risk to the operational JTEN, permits simultaneous test & evaluation without impact to JTEN events, and permits fielding capabilities at a much quicker rate than waiting for windows of availability on the production JTEN. • Continue development of the JAAR-RL to add additional data collection and reporting capabilities in order to enhance near-real time and post event assessment of Joint Warfighters performance. Continue development of the web-based user interface and JAAR-RL as an enterprise service via cloud computing prototype.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• JLVC will implement a terrain service prototype that will provide a common environment service for a large number of simulations in the Joint Training Enterprise. • Develop and implement a Service Oriented Architecture (SOA) approach for Joint training information applications by creating interfaces between Joint training web applications and the JCWM Enterprise document management system. This will provide greater access to information and reference document resources. The focus will be on eliminating redundancy and providing a consistent set of services. • Develop and implement the capability to represent civilian infrastructure networks. This will enable JLVC to provide more realistic Battle Damage Assessment to training audiences.			
Accomplishments/Planned Programs Subtotals	17.921	11.559	24.381

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0804767D8Z: *JNTC O&M Funding*	46.190	38.160	33.990		33.990	34.780	34.590	35.400	35.400	Continuing	Continuing
• 0804767D8Z-: *JNTC Procurement Funding*	12.841	6.817	6.000		6.000	5.999	5.998	5.999	6.119	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

The Deputy Director Joint Staff J7 Joint Coalition Warfare (DD J7 JCW) boards, cells, and working group (BCWG) structure approved in December 2011 reviews all RDT&E equities. The BCWG structure consists of senior technical, operational, and program manager representatives within the Joint Force Trainer Community. Responsibilities encompass merging and prioritizing technical training requirements, apportioning work to the RDT&E elements based on an assessment of where the work is best accomplished and evaluating the efficacy of development efforts based on performance metrics. 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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
759: *Joint Innovative Training Methods & Tools (JITMT)*	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 DJ7 90 day plan, dated 17 Oct 11, DD J7 JCW leads the development of constructive simulations to support joint exercises that stress operating in the environment of the next 8-10 years including hybrid threats, ballistic and cruise missile threats, anti-access/area denial, and degraded networks due to cyber threats. The DD J7 JCW BCWG structure reviews 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 2011	FY 2012	FY 2013
Title: P759 Joint Innovative Training Methods & Tools (JITMT)	1.994	-	-
Description: The JITMT effort focused on comparing current training capabilities with training requirements in order to identify gaps in our current Joint training capability, to identify alternatives for resolution and to assess the cost and effectiveness of these alternatives. Specifically, the JITMT focuses on: (1) developing and integrating enhancements to the existing and programmed constructive simulations, (2) pursuing selected alternative training methodologies, (3) developing an innovative acquisition prototype, (4) developing solutions to implement recommendations from the Joint Staff's comprehensive study to re-engineer Joint training and (5) developing a clear management and oversight structure to meet future Joint training requirements. These efforts provide solutions to the 35 gaps and seams in Joint and Service training requirements identified by the COCOM's in the SECDEF 2004 JITMT study. 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 2011 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Enhanced emerging technologies such as immersive virtual technologies, story driven training and massive-multiplayer online game technology by developing two new prototypes for Joint community unique simulations in support of JITMT gaps. • Implemented DSCA Front End Analysis recommendations. • Developed and Refined 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 Front End Analysis (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). • Researched and developed a Service Orientated Architecture (SOA) 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 provide 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			
Accomplishments/Planned Programs Subtotals	1.994	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0804767D8Z: *PROC-Joint Innovative Training Methods & Tools (JITMT)*	1.110									Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 Simulations Systems (JSS)*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
761: *Joint Simulations Systems (JSS)*	7.208	-	3.017	-	3.017	3.119	3.243	3.395	3.395	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This program supports the development of capabilities in Joint simulations to eliminate COCOM identified training gaps.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: P761 Joint Simulation System (JSS)	7.208	-	3.017

Description: This effort provides warfighters with Joint Simulations and Tools that enhance and enable Joint training across Services, COCOMs, Agencies and Coalition partners. These Joint Simulations and Tools are part of an overall Joint Live, Virtual, and Constructive (JLVC) baseline of 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 Joint Simulations and Tools provided by JSS are critical enablers that support the delivery of trained, capable, and interoperable Joint Forces.

FY 2011 Accomplishments:

- Documented existing standards and protocols needed to enable greater virtual trainer integration into the JLVC.
- 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 2013 Plans:

- Develop integrating Service Oriented Architecture (SOA) architecture using High Level Architecture (HLA) 1516-2010, to support JLVC federation evolution to next generation of M&S and joint training support.
- Develop one M&S Joint training environment made up of multiple simulation capabilities to support the Joint Training Enterprise (includes coalition and interagency partners).
- Provide a multi-resolution/multi-echelon M&S capability for training audiences from the Strategic to tactical level within an LVC environment.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 Simulations Systems (JSS)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
• Develop enhancements to constructive simulation models to support integration with virtual simulators and live and instrumented ranges. • Develop enhancements in JLVC to address hybrid warfare, area denial and ballistic missile defense capabilities.			
Accomplishments/Planned Programs Subtotals	7.208	-	3.017

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0804767D8Z: *JSS O&M Funding*			1.000		1.000	1.000				Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

The Joint Staff J-7 Joint and Coalition Warfighting boards, cells, and working group (BCWG) structure approved in December 2011 reviews all RDT&E equities. The BCWG structure consists of senior technical, operational, and program manager representatives within the Joint Force Trainer Community. Responsibilities encompass merging and prioritizing technical training requirements, apportioning work to the RDT&E elements based on an assessment of where the work is best accomplished and evaluating the efficacy of development efforts based on performance metrics. 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?

Short Term MOEs:

- Provide the JLVC Federation version 6.0 by 30 September 2012 to enable Services, COCOMS, Agencies and Coalition partners to deploy trained, capable, and interoperable joint forces.
- JLVC version 6.0 is delivered on time with less than ten priority one and two problem trouble reports.
- JLVC version 6.0 has an exercise availability rating of 95%.

Long Term MOEs:

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 Simulations Systems (JSS)*

• Reduce future joint exercise technical support and model operator cost by 15% as measured against the Event Definition Brief cost figures that will be given at the March 2012 World-Wide Joint Scheduling and Training Conference.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
764: *Irregular Warfare (IW)*	7.522	11.263	-	-	-	-	-	-	-	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 our General Purpose Forces (GPF) receive immersive, pre-deployment training equal to that provided to Special Operations Forces (SOF). JNTC IW 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 to 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. Develops 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. 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 2011	FY 2012	FY 2013
Title: P764 Irregular Warfare	7.522	11.263	-
Description: 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.			
FY 2011 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Conducted feasibility and risk analysis study to assess the best practices and mitigate risks in building a mobile van that provides the capability to enable JLVC models and simulators to be forwarded to conduct JTAC/CAS training linking Live traffic, ROIP, VOIP, live, radios, Tactical JTEN, JREAP, SATCOM in a JLVC IW environment. • Integrated Coalition initiatives and investments in IW Simulation and Immersive training capabilities. • Developed close combat infantry immersive training capabilities that fully replicate the effects and conditions of the operational environment; developed a state of the art close combat environment to enable enhanced decision making, increased military effectiveness, reduce friendly and non-combatant casualties, increase lethality, contribute to combat team proficiency, increase survival and success rates, and improve small unit performance in current and future complex threat environments. • Continued initial development of an Immersive Virtual Mission Rehearsal training capability for SOFs 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. • Established a permanent Virtual Predator simulation at Fort Polk and Nellis Tactical Training 60 series ranges which provide U.S. and Coalition Joint Terminal Attack Controllers essential and realistic operational and tactical training prior to deploying to an OIF/OEF AOR.			
FY 2012 Plans: • Conduct research and development for future modeling and simulation approaches for interoperability. • Develop the Joint Conflict and Tactical Simulation (JCATS) and JCATS Joint Low Overhead Driver (JLOD) to integrate human high performance cognition and decision-making best practices into joint training. • Develop consensus from COCOMs, Services and Combat Support Agencies on critical tasks and essential IW training requirements to build an IW training M&S support strategy. • Continue analysis on the identification of IW training gaps, adaptation to emerging requirements and incorporation into Service training and pre-mission rehearsal exercises. • Implement Service Oriented Architecture (SOA) in JLVC and joint simulations federations directed at closing the 35 gaps and seams identified by the Joint Training Analysis of Alternatives (TCAoA) and prioritized by the Training Gaps Analysis Forum (TGAF) chaired by JCW. Develop prototype M&S net-centric capability to train adaptive training. • 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 battle space 2 (VBS2) worlds and other gaming technologies. • Continue gathering, defining, and validating Modeling and Simulation functionality requirements pertaining to IW and the associated overall technical Management of Systems engineering and development efforts.			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Continue management of Joint Modeling and Simulation Development Programs. Tracking and managing of software delivery schedules and contracts. Fully integrate proven/certified training initiatives and capabilities into Service and Joint Training programs of record.			
Accomplishments/Planned Programs Subtotals	7.522	11.263	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0804767D8Z: *IW O&M Funding*	0.678	5.202	4.956		4.956	5.230	5.282	5.019	5.019	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

The Joint Staff J-7 Joint and Coalition Warfighting boards, cells, and working group (BCWG) structure approved in December 2011 reviews all RDT&E equities. The BCWG structure consists of senior technical, operational, and program manager representatives within the Joint Force Trainer Community. Responsibilities encompass merging and prioritizing technical training requirements, apportioning work to the RDT&E elements based on an assessment of where the work is best accomplished and evaluating the efficacy of development efforts based on performance metrics. 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?

Short Term MOE:

- Provide a 10% increase in capacity for the number of Soldiers, Sailors, Airmen, and Marines able to be trained in 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.
- Combine IW with JLVC federation forum to correctly model (provide realism) to the human dimension, immersive training and joint capabilities at the small unit level through M&S.
- Contribute to DOD-wide immersive training related initiatives.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*

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 combined Joint roadmap of an immersive IW training environment and M&S supported training environment that allows the Services to reduce duplicated efforts and enables them to discern logical touch points and leverage each other's work.
- Complete identification of authorities and roles and responsibilities for multi-national consortium that results in sharing of immersive training capabilities.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
769: *Joint Knowledge Development & Distribution Capability (JKDDC)*	2.194	1.207	4.656	-	4.656	5.292	4.901	5.378	5.378	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 Joint Knowledge Online (JKO) Stakeholder (COCOMs, Services, and Combat Support Agencies) prioritized training requirements. JKDDC JKO 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 initiative supports advanced technology development and enhancement for the Joint Advanced Distributive Learning enabled training community. JKDDC JKO advanced technology initiatives primarily include Virtual Cultural Awareness Training (VCAT) web-based gaming, the Small Group Scenario Trainer (SGST), and mobile courseware training devices. These capabilities facilitate the training and preparation of tens of thousands of military and civilian personnel deploying to COCOM theaters of operation prior to serving in their assigned Combined/ Joint Task Force (C/JTF) billets. Specifically, VCAT supports one of the top identified training shortcomings of returning warriors from United States Central Command (USCENTCOM) based C/JTFs (i.e. cultural awareness training). C/JTF 'battle staffs' are becoming more adequately trained, as individuals and the staffs collectively, based on SGST development and implementation throughout the joint training enterprise. JKO mobile courseware training device development facilitates the global distribution of web-based joint training content on portable, hand-held platforms for joint warriors. All of these web-based training products mitigate training deficiencies in critical joint 'go to war' tasks.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: P769 Joint Knowledge Development & Distribution Capability (JKDDC)	2.194	1.207	4.656
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 are developed in response to JKDDC Joint Knowledge Online (JKO) Stakeholder (COCOMs, Services, and Combat Support Agencies) prioritized training requirements. JKDDC JKO 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 initiative supports advanced technology development and enhancement for the Joint Advanced Distributive Learning enabled training community. JKDDC JKO advanced technology initiatives primarily include Virtual Cultural Awareness Training (VCAT) web-based gaming, the Small Group Scenario Trainer (SGST), and mobile courseware training devices. These capabilities facilitate the training and preparation of tens of thousands of military and civilian personnel deploying to COCOM theaters of operation prior to serving in their assigned Combined/Joint Task Force (C/JTF) billets. Specifically, VCAT supports one of the top identified training shortcomings of returning warriors from United States Central Command (USCENTCOM) based C/JTFs (i.e. cultural awareness training). C/JTF 'battle			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

staffs' are becoming more adequately trained, as individuals and the staffs collectively, based on SGST development and implementation throughout the joint training enterprise. JKO mobile courseware training device development facilitates the global distribution of web-based joint training content on portable, hand-held platforms for joint warriors. All of these web-based training products mitigate training deficiencies in critical joint 'go to war' tasks.

FY 2011 Accomplishments:

• Developed Virtual Culture Awareness Trainer (VCAT) South America web-based training game. This SOUTHCOM AOR required cultural awareness training product focuses on 5 dominant SOUTHCOM mission scenarios, in 10 different countries, integrates 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 operational proficiency of tactical units from all Services deploying to SOUTHCOM's AOR improved via this JKO provided training product.

• Developed Small Group Scenario Trainer (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. Version 2 enhances joint warrior provided recommendations from version 1, and targeted development of six additional SGST scenario usecases for representative JTF staffs, all designed to complement existing COCOM mission rehearsal exercises in preparation for deployment to COCOM theaters of operation. Thousands of joint, interagency, intergovernmental and multinational participants are better trained as individuals and collectively as small teams prior to and during deployment in COCOM environments.

FY 2012 Plans:

• Develop Virtual Culture Awareness Trainer (VCAT) South America Phase II web-based training game. Based on the FY11 success with VCAT South America training utility in the SOUTCHCOM AOR, SOUTHCOM requires an enhanced training product focusing on 5 expanded mission scenarios, in the Andean Ridge geographic region, integrating Defense Language Institute (DLI) approved language training content, while simultaneously demonstrating an improved capability to deliver training via an innovative training technique on JKO.

• Operationalize JKO training simulation by developing SGST version 3, a small group training capability focused on improving the training readiness of individuals and small joint headquarters staffs. Version 2 enhanced joint warrior provided recommendations from version 1, and targeted development of six additional SGST scenario use cases for representative JTF staffs, all designed to complement existing Combatant Command mission rehearsal exercises in preparation for deployment to their respective theaters of operation. Version 3 will increase training audience participant size to 40 concurrent players (vice current 8-10). Additionally, users will be able to create their training scenarios more efficiently with minimal resources. 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 COCOM environments.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Develop select mobile training device capabilities based on JKO 'high payoff' courseware. Targeted courses include (but not limited to) Cross Culture Competency Trainer, Virtual Cultural Awareness Trainer + Language Afghanistan, US Army's Headstart2 Language Training, US Forces Korea Theater Specific Training, US SOUTHCOM's Human Rights Awareness, & Survival, Escape, Resistance, and Evasion training products. These joint training courses will be playable from the JKO web-based desktop and from iOS, Android and BlackBerry operating systems based portable, hand-help devices. ***FY 2013 Plans:*** • Craft and implement a comprehensive plan to develop mobile training device capabilities focused on JKO's entire Joint Individual Training Toolkit. Plan components include existing JKO courseware conversion to portable, hand-held devices; emerging training courseware requirements interoperable with portable, hand-held devices; and the leveraging of other DoD agencies, Interagency, and Multinational training courseware ported to mobile training devices. • Introduce SGST version 4, developed to continue achieving joint warrior directed training requirements and improve training readiness of individuals and small joint headquarters staffs. Version 4 will enhance joint warrior provided recommendations from versions 1 through 3, and target development of four additional SGST scenario use cases for representative JTF staffs, all designed to complement existing Combatant Command mission rehearsal exercises in preparation for deployment to their respective 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 COCOM environments. • Develop emerging Virtual Culture Awareness Trainer (VCAT) web-based game training requirements. Products will take advantage of joint warrior provided recommendations from the five existent VCAT games, expand the number of training audience AOR environments (as prioritized by DoD senior leaders), integrate DLI approved language training content, while simultaneously demonstrating an improved capability to deliver training via an innovative training technique. • Develop a future learning ecosystem that will provide training and learning environments (software agents) with the capability to tailor and adapt instructional material to fit the individual's cognitive strengths and weaknesses, learning style, level of proficiency, and the learner's present state of being and understanding across a broad range of content.			
Accomplishments/Planned Programs Subtotals	2.194	1.207	4.656

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0804767D8Z: *JKDDC O&M Funding*	9.695	3.650	7.160		7.160	7.210	7.370	7.510	7.510	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0804767D8Z-: *JKDDC Procurement Funding*	0.279	0.284								Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Joint Staff prescribed 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 JCW Performance Management Working Group is the directed 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 frequently, briefed periodically to the JCW leadership, and rolled up into the JCW 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:

- 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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
770: *U.S. Forces Korea Training and Exercise Support*	10.211	7.339	6.497	-	6.497	6.451	4.483	1.378	1.378	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

USFK's current federation of models, including the overarching Joint Training Transformation Initiative Korea is used only at USFK, does not meet Coalition interoperability requirements, and cannot fully utilize the Joint Live Virtual Constructive (JLVC) Federation's capabilities. Joint Staff J-7, in collaboration with USFK and appropriate Republic of Korea agencies, integrate Warfighters' 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 and implement selected pieces of recommendations identified in the LVC report, the Flagship Study.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: USFK Training & Exercise	10.211	7.339	6.497

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 Accomplishments:

- Initial design, development, integration, test, document and integration of the Joint Deployment Logistics Model (JDLM) into the Joint Live Virtual Constructive (JLVC) Federation.
- Initial collection and assessment of data related to changes in current JLVC operations, processes, and procedures to provide systems engineering approaches to improve USFK-JLVC capabilities.
- Initial Joint Terrain Data Services data enhancement to support US Army Warfare Simulation (WARSIM, US Army Warfare Intelligence Model (WARSIM-WIM), and to provide rapid scenario generation.
- Initial technical and engineering Joint Semi Automated Forces modeling and simulation software design/BUS enhancements

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Initial Joint Theater Level Simulation (JTLS) research and development of Service Oriented Architecture (SOA) and associated web services application programming interface (API) in accordance with HLA 1516-2010 to support a JTLS, Joint Conflict and Tactical Simulation (JCATS) and Virtual Battlespace 2 (VBS2) federation. • Initial research and development of integrated initial Integrated Air and Missile Defense Modeling & Simulation (M&S) training capability within M&S training capability for USFK. • Conducted modeling and simulation research, design and development in support of United States Air Force training requirements. • Exploratory development of a battle simulation training capability by Air Force Modeling and Simulation Agency (AFAMS) and Electronic Systems Command (ESC-USAF) for integration of software prototypes involving data distribution systems and common interfaces into the synthetic environments of simulations. • Research, development, test and evaluation for the Joint Conflict and Tactical Simulation Low Overhead Driver (JCATS-JLOD) program to expand current capabilities and of Joint, Live, Virtual, and Constructive Federation and integration of KORCOM modeling and simulations. ***FY 2012 Plans:*** • Initial WARSIM and WIM (test suite) software design, development and testing •Enhanced technical planning to include development of detailed implementation plan. • Research WARSIM Data Initialization requirements. • Developed network evaluation and implementation plan and timeline. • Integrated Navy/Air Force models with WARSIM as a part of USFK's M&S training capability. • Provided cross domain information sharing solution between USFK and ROK forces. ***FY 2013 Plans:*** • Research, development, test and evaluation for JCATS-JLOD scalability. • Conduct WARSIM Scalability testing. • Continue development of integrated Air and Missile Defense Modeling & Simulation (M&S) training capability within M&S training capability for USFK (Tier 1-3). • Development of MTWS aggregated composable models.			
Accomplishments/Planned Programs Subtotals	10.211	7.339	6.497

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0804767D8Z: *U.S. Forces Korea Training & Exercise Proc*	0.495	0.330	0.303		0.303	0.305	0.295	0.300	0.300	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

The Joint Staff J-7 Joint and Coalition Warfighting boards, cells, and working group (BCWG) structure approved in December 2011 reviews all RDT&E equities. The BCWG structure consists of senior technical, operational, and program manager representatives within the Joint Force Trainer Community. Responsibilities encompass merging and prioritizing technical training requirements, apportioning work to the RDT&E elements based on an assessment of where the work is best accomplished and evaluating the efficacy of development efforts based on performance metrics. 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?

Short Term MOEs:

- Develop software for JLVC simulations with initial integration of the Army's WARSIM Model 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 WARSIM 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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
754: *Immersive Simulation*	-	-	32.900	-	32.900	15.000	17.415	17.127	17.127	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

A state of the art simulated close combat environment will enable enhanced decision-making by squads and platoons, increasing their military effectiveness, reducing friendly and non-combatant casualties and increasing lethality against foes. It will contribute to combat team proficiency and decision making across the full range of military operations, from irregular to conventional. This training capability will increase survival and success rates in first and subsequent combat actions.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Immersive Simulation	-	-	32.900

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 2013 Plans:

• Highly Detailed Scenarios. Develop scenario data that is sufficiently detailed to satisfy training requirement. Develop training scenarios that replicate the contemporary operating environment. Develop a comprehensive set of IW tasks, conditions and standards to enable training relevant to ethical and tactical decision making. Develop specific scenario requirements that support mission-specific rehearsal, including representation of second and third order effects of ethical and tactical decisions made under conditions simulating combat stress.

• Geo-typical Data Repositories. Develop standardized repositories for geo-typical data such as terrain features, vegetation, population appearance, cultural behaviors (i.e., correct form of greeting in a specific location), language and dialect.

• External Enablers Representation. Identify and create processes to leverage a pool of expertise for each external capability to be represented. Develop training standards for controllers representing external enablers. Enhance automated responses for required external enablers. Establish habitual relationships with organizations representing and or providing external enablers at the tactical level, in order to enhance interoperability, maintain currency and ensure validity of the scenario.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• Natural Verbal and Non-Verbal Communication. Develop a broader selection of gestures available through a range of interface devices. Further develop Voice over Internet Protocol (VOIP) technology for use with live, virtual and gaming technologies. Further develop natural gesture recognition capabilities. Further develop natural voice recognition capabilities. • Autonomous Behavior. Develop methodology to characterize and organize entity behaviors. Expand library of scripted behaviors and supporting animations (including individuals, cells and units) to allow limited interactions with trainees. Develop improved game engine and virtual Semi-Automated Forces (SAF) behaviors in order enhance tactical and ethical decision making. Develop a detailed response library for certain conditions and behaviors. Develop virtual human with capability to perceive and understand the environment. • Sensory Stimulation. Further develop and integrate current olfactory systems for both live and virtual environments. Further develop and integrate current hap tic feedback devices for both live and virtual environments. Further develop and integrate higher resolution display technologies for both live and virtual environments. Further develop and integrate enhanced audio technologies for both live and virtual environments. Integrate all sensory stimulation capabilities in order to maximize overall effectiveness within the training environment. Conduct research into best methods to stimulate the senses in a training environment. Conduct research into the effectiveness and value of sensory stimulation in a training environment. • Interactions. Conduct research to determine optimal level of interaction within the training environment, with respect to the training requirements. Develop tools to eliminate the capability gaps in Sensory Stimulation, Natural Verbal and Non-Verbal Communication Methods, Visual Representation of Terrain, and Visual Representation of Individuals. • Visual Representation of Terrain. Develop a central repository of correct textures, models and objects. Leverage technology advancements from the commercial gaming industry to improve visualization engines. • Visual Representation of Individuals. Develop a library of common body 3D frameworks to represent a variety of visual characteristics. Develop and utilize body-mapping technology to enable live role-players to drive avatar movement. Develop and utilize facial mapping technology to enable live role players to provide realistic avatar facial expressions. Develop a library of cut scenes and pre-recorded video segments for common human motions and movements. Develop and maintain a database of highly realistic animations. Leverage commercial gaming technology to allow rapid generation of unique avatars. Leverage technology resident in the entertainment industry to enhance immersive training.			
Accomplishments/Planned Programs Subtotals	-	-	32.900

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0804767D8Z: *Immersive Trainer O&M Funding*	6.800	16.316	1.744		1.744	19.943	23.214	15.101	15.101	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 – Enable the Joint Force Trainer to prepare and execute training more timely than current capabilities allow
- Cost – Enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow
- Realism – Enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow
- Fidelity – 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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
701: *Air Force JNTC*	-	2.355	2.041	-	2.041	2.307	2.716	2.794	2.794	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 2011	FY 2012	FY 2013
Title: AF JNTC	-	2.355	2.041
Description: Supports the Secretary of Defense (SECDEF) 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 development of Air Force Modeling and Simulation Tool Kit (AFMSTT) Scenario and Terrain modules. CONTINUE: Multi-Level Security (MLS): Enables Virtual and Constructive entities of various classification levels to be accessed by users with different security clearances and needs-to-know, and prevent users from obtaining access to information for which they lack authorization. CONTINUE: Concept of Operations for Space Distributed Mission Operations Center (DMOC): Continue space effects and Global Positioning System (GPS) jamming integration into JNTC. Net effect will be a single validated and authoritative Modeling and Simulation data source for the Space Order of Battle. ***FY 2013 Plans:*** USAFE Joint Live Virtual Constructive Training Annex (ULTrA): Projects Joint Live Virtual Constructive capability to austere locations in Africa and Eastern/Northern Europe to support Building Partnership and nation building efforts. ULTrA provides models, simulators, end integration equipment, and a distribution capability in a mobile platform to train Coalition Joint Terminal Attack Controllers (JTACs) and small unit tactics.			
Accomplishments/Planned Programs Subtotals	-	2.355	2.041

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0804767D8Z: *Air Force JNTC O&M Funding*	15.045	15.480	14.796		14.796	14.497	14.387	13.359	13.109	Continuing	Continuing
• 0804767D8Z-: *Air Force JNTC Procurement Funding*	13.528	0.255								Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

The Joint Coalition Warfare (JCW) Financial Management Board (FMB) and Contract Acquisition Management Board (CAMB) review all Research Development Test and Evaluation (RDT&E) equities. The JCW 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 JCW Joint Training End-of-Fiscal Year Performance Report to ensure transparency and accountability.

USAFE ULTrA:

- Feasibility study of six (6) month duration to determine optimum configuration and suggest acquisition strategy.
- Contract award within four (4) months of funds receipt.
- Engineering design complete (software integration/hardware integration/mobile platform developed) within six (6) months of contract award.
- Initial Operational Capability (IOC) (system tested and capability validated) within two (2) years of contract award.
- Full Operational Capability (FOC) (field use meeting requirements of all accepted missions) eighteen (18) months after IOC.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
772: *Navy JNTC*	-	3.532	3.983	-	3.983	4.180	4.360	4.673	4.673	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

These funds enable Navy in developing unique maritime capabilities that integrate live, virtual, and constructive elements into a seamless joint training environment. Navy continues to develop and integrate joint training technologies that play a crucial role in its ability to address current and future joint operational training requirements.

Navy JNTC RDT&E program conducts cross-service architecture certification on all T2 capable systems, developing cross-domain architectures for US and Coalition Forces as well as ensure other military service modeling/simulation and instrumentation efforts follow a common unified standard.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Navy Joint National Training Center	-	3.532	3.983
Description: Supports the Secretary of Defense (SECDEF) 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 ground, air, space and maritime capabilities, researches new technologies and methods that provide a crucial technology-based foundation supporting all JNTC T2 operations. Navy JNTC T2 RDT&E efforts (JSAF M&S Development & JNTC/JLVC Navy Federation Object Model (FOM) Integration) directly support the Unified Command Plan (UCP) and is aligned with the DOD information Operations (IO) Roadmap. ***FY 2012 Plans:*** • Navy will further develop capabilities to address ASW improvements, information operations, BLUFOR capability representation including Littoral Combat Ship (LCS), P-8A, Surface Warfare Enterprise Advanced Capability Build (ACB) development and integration and emergent threats. Navy will further address additional Coalition Partner Integration, LCS Shore Based Training Facility (SBTF) integration, Combined Armed Forces (CAF) -Distributed Mission Operations (DMO) integrations and Korean Simulation Battle Center (KSBC) integration. • Navy will further develop capabilities to address Irregular Warfare, Information Operations ASW improvements and respond to emergent threats. Navy will concentrate on advanced coalition integration technology while keeping pace with coalition partner			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
integration. Other integration efforts include: DDG 1000, UAS BAMS, ASW, continued KSBC, and Surface Warfare Advanced Capability Build. ***FY 2013 Plans:*** • Navy will provide capabilities that support Ballistic Missile Defense (BMD) training - tailored to the Navy's DDG/CG onboard BMD capability. This effort involves continuous integration of numerous BMD models at the Missile Defense Agency (MDA) as well as the communication links/data paths that allow us to provide this training to DDG/CG even while at sea. Navy will further develop capabilities to address ASW improvements, information operations, BLUFOR capability representation including Littoral Combat Ship (LCS), P-8A, Surface Warfare Enterprise Advanced Capability Build (ACB) development and integration and emergent threats. • Navy will further address additional Coalition Partner Integration, Integrated Undersea Surveillance System (IUSS)/Surveillance Towed Array Sensor System (SURTASS) integration, Combined Armed Forces (CAF) -Distributed Mission Operations (DMO) integrations, Korean Simulation Battle Center (KSBC) integration, and Cooperative Engagement Capability (CEC). • Navy will make significant improvements to JSAF's representation of a realistic threat environment to address high priority training gaps. These threat environment improvements include a more tactically-realistic electronic signals environment; unmanned intelligence, surveillance and reconnaissance (ISR) platform representation and employment; support and stimuli for US signals collection models, training systems and combat systems; electronic attack (EA) representation; and an improved threat common operational picture representation for two-sided event support.			
Accomplishments/Planned Programs Subtotals	-	3.532	3.983

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0804767D8Z: *Navy JNTC O&M Funding*	13.838	7.814	7.816		7.816	7.735	7.736	7.352	7.352	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Joint Coalition Warfare (JCW) Financial Management Board (FMB) and Contract Acquisition Management Board (CAMB) review planned 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

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

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 war-fighter requirements.

Specific performance metrics for FY 2012 include, but are not limited to:

• Navy will produce one JSAF 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 will produce one Navy Training Federation Object Model (FOM) (NTF) 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.

• Navy will deliver a JSAF/JNTC-JLVC FOM interoperability Guide.

• Navy will 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 FOM for integration across the Navy training simulations.

• Navy's 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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	0.753	-	-	-	-	-	-	-	-	Continuing	Continuing
546: *Financing for Cancelled Account Adjustments*	0.753	-	-	-	-	-	-	-	-	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	0.753	-	-	-	-
Total Adjustments	0.753	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.753	-			
• SBIR/STTR Transfer	-	-			

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Not applicable for this item.	0.753	-	-
FY 2011 Accomplishments: Not Applicable for this item.			
Accomplishments/Planned Programs Subtotals	0.753	-	-

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	41.383	29.059	-	-	-	-	-	-	-	Continuing	Continuing
P818: *Joint Integration & Interoperability*	41.383	29.059	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.

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 2013 Office of Secretary Of Defense					DATE: February 2012
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	44.139	29.880	28.470	-	28.470
Current President's Budget	41.383	29.059	-	-	-
Total Adjustments	-2.756	-0.821	-28.470	-	-28.470
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.857	-0.622			
• Other Program Adjustments	-1.513	-	-28.470	-	-28.470
• FFRDC	-0.162	-0.199	-	-	-
• Economic Assumptions	-0.224	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P818: *Joint Integration & Interoperability*	41.383	29.059	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

Note

In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.

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 and interoperability of the C2 Portfolio including coordination of C2 operational architectures, standards, and policies. Likewise, JI&I partially funds integration and decision support activities associated with DOD executive level C4 management and oversight.

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. 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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Title: Joint C2 Capability Development and Integration	5.105	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 integrated and synchronized across the Department's requirements, resources and acquisition processes, enhancing the joint war fighting capabilities of the combatant commanders. The JI&I program, in coordination with the Defense acquisition enterprise, assesses the effectiveness of C2 capabilities, identifies emerging capability gaps, and formulates recommendations to address those gaps via the Joint Staff.

To hasten delivery of C2 capabilities across the full spectrum of warfare, Joint Test and Evaluation (T&E) requirements were assessed to formulate a Net Enabled Universal Joint Task (NE-UJT) Working Group, which is refining the quantitative aspects of the Net Ready Key Performance Parameters (NR-KPP); C2 attributes measurable through T&E. JI&I personnel participated in exercises including Joint Task Force Exercises (JTFEX), Empire Challenge, and Bold Quest to identify and collect C2 attributes suitable to support joint C2 operational assessments. These T&E support efforts spawned the C4I Partnership (C4IP) for evaluation of operational and tactical C2 capabilities both fielded and under development.

The primary outputs and efficiencies pursued through Joint C2 Capability Development and Integration efforts 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 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 2011 Accomplishments:

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Achieved C4I Partnership (C4IP) Initial Operating Capability (IOC) to establish a persistent joint assessment and certification environment for testing. Provided ongoing support to Joint C2 Capability Analysis of Alternatives (AoA) and modernization efforts. Continued work with Services regarding Authoritative Data Source exposure schedule. Continued development of Joint Mission Threads (JMTs). Conducted analysis to determine DOTMLPF capability development priorities across the C2 portfolio. Used Mission Analysis and validated COCOM Senior Warfighter Forum (SWarF) inputs, to provide department's 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 C4IP 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 capability solutions necessary to satisfy warfighting requirements and inform Fiscal Year 2014 resourcing deliberations.			
Title: Combat Capability Developer (CCD) ***Description:*** The primary objective for this effort is to meet joint warfighter command and control (C2) needs through a flexible and responsive capability-needs development and oversight process across the full spectrum of C2 development; strategic-to-tactical. The CCD 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 CCD 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 CCD employs a formalized C2 governance and management process codified in CJCSI/M 3265.01, CJCSI 6285.01B, and the JROC-approved Charter for Joint C2 Capability Requirements Governance to collect, collate, validate, prioritize, and sequence the many C2 stakeholder requirements and capability needs, and ensure Service and agency development efforts are synchronized. As a key leader of C2 governance and management processes, the CCD co-chairs two 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 O6-level CCD 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 CCD leads semi-annual Plan Build conferences composed of Service and Agency materiel developers to prioritize and	6.535	5.528	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

coordinate C2 development efforts by fiscal year. To support requirements management and capability development/integration, the CCD 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 CCD oversees maintenance and development of innovative tools and techniques to support analysis of C2 capabilities based on technical, operational, and programmatic criteria.

FY 2011 Accomplishments:

Performed C2 capability prioritization and sequencing via the agile Plan Build process, with follow-on capability production, integration and deployment. Provided direct 'hands-on' engagement to Component materiel developers to operationally shape products while ensuring requirements traceability. Co-authored updates to C2 management documents to support changing Department directives and instructions, to include CJCSI 3265.01, C2 Governance and Management and CJCSI 3170.01, Joint Capabilities Integration and Development System (JCIDS). Continued to maintain and manage C2 requirements databases, and utilize C2 governance and management forums to adjudicate and prioritize needed changes to the Global Command and Control System (GCCS) Family of Systems (FoS) and Joint C2 capabilities to include: Adaptive Planning and Execution, cross domain solutions, information sharing, security cooperation, planning, modeling & simulation, Future Mission Networks, and ozone widget framework desktop applications. Ensured operation of the GCCS FoS (Do No Harm) while transitioning C2 capabilities to an agile enterprise environment. Re-assessed GCCS FoS sustainment strategy based on programmatic funding adjustments. Continued to engage with interagency, multi-national and non-government organizations to address requirements for vertical and horizontal collaboration and information sharing in a multi-national environment. Leveraged the Joint C2 Capability Requirements Governance Charter to ensure appropriate requirements governance was achieved throughout the life-cycle of ongoing joint C2 and associated programs. Lastly, worked with the NATO C2 Centre of Excellence to develop a construct to organize and share Component C2 information elements. Continued 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 included: the Net-Enabled Requirements Identification Database (NRID) and the Decision Support Tool (DST) to provide greater accessibility and visibility into C2 capability needs, defined requirements, and potential solutions.

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 forums to develop funding needs for joint C2 architecture and data standards required 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 Capability Definition Packages (CDPs) for Adaptive Planning and Execution and Multi-national

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Mission Partner requirements and capability needs. Support and align NATO C2 Centre of Excellence C2 information capabilities. Capability analysis tool updates include development of: comprehensive system descriptions; document libraries; images; architectures; analysis and visualization tools capabilities; yellow pages and interactive calendar of events; Visual Command and Control Capability Analysis and Tradeoff Suite (VC3ATS) 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	5.937	5.397	-
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 2011 Accomplishments:*** Published C2 Core Version 2.0 continuing the work accomplished in FY 2010, a comprehensive C2 XML-based, information exchange data standard which includes re-usable components, a suite of rules (extension, naming and design, and conformance), tools, and associated documentation. Provided C2 Core training and support to FY 2011 C2 Core piloting activities and other C2 Core development and implementation activities. Managed and chaired of the C2 Core Configuration Control Board, which manages the data model design to ensure both relevance and best practices. Mapped C2 Core data elements to 3, Tier One Joint Mission Threads, to ensure data model content is "right sized" for optimum warfighter use. Executed FY 2012 ADS Annual Review Board in conjunction with the Joint C2 Build/Plan process to synchronize data exposure with capability development. Maintained C2 ADS information in the DoD Enterprise ADS Registry, compiled and reported ADS exposure metrics quarterly. Mapped the ADS to 3, Tier One Joint Mission Threads, will enable efficient reuse of existing data sources. Executed Operational Utility Assessments (OUAs) for the Tactical Edge Data Solutions (TEDS) JCTD Increment I and Increment II, which demonstrated			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Joint and Coalition C2 interoperability. Executed Common Ground JCTD User utility assessments, the results of which were incorporated into the Common Joint Mapping Tool Kit as an enterprise license. Provided data & service strategy reviews and recommendations for Information Support Plans (ISPs), capabilities development documents, and guidance and policy documents for over 40 documents. Led the C2 Data and Services Steering Committee eight times, which provided a formal process to establish C2 data sharing priorities and standards for C2 capabilities. Provided oversight in the processing of over 350 Interim Change Proposals (ICPs) for Tactical Data Links (TDLs) and United States Message Text Formats (USMTFs), ensuring that US standards and NATO standards were synchronized and validated through the respective configuration control boards and processes. ***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. Continue mapping C2 Core elements to Joint Mission Threads. 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. Continue mapping ADS to Joint Mission Threads. 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 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, and Fires related Joint Command and Control Capabilities. ***FY 2011 Accomplishments:*** Completed multi-service/agency DEPSECDEF tasked effort for Joint Cooperative Target Identification – Ground (JCTI-G) Analysis of Alternatives (AoA)—all recommendations endorsed by Operational Integrated Product (OIPT) lead. Led Bold Quest 11 Demonstration at Camp Atterbury, Indiana with 1018 participants from 11 nations. Initiatives included: Advanced Situational Awareness Training for Soldiers; Immersive Training Environments at the Muscatatuck Urban Training Center; Personnel Recovery tracking of Norwegian HALO Parachute SOF team; and digital exchange of targeting information between strike aircraft and terminal controllers. Executed CID-FFT Executive Steering Committee (ESC) actions. Prepared CID Server for ISAF fielding with completion of developmental and operational testing—proven potential to reduce Air-to Ground friendly fire	3.000	8.800	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
incidents. Expanded Joint Friendly Fire Data Base of combat fratricide events and conducted trend analysis to support JCTI-G AoA analysis. Led JROC-directed Tactical Information Classification and Security (TICS) Study, determining the appropriate balance between information protection and rapid tactical unit access, leading to policy and technical recommendations. Pursued integration efforts for synchronized Service testing, acquisition and fielding of Mode 5 IFF capability, with IOC in 2014 and FOC in 2020. Executed multi-service/agency cost effective Mode 5 Level 2 Joint Implementation Strategy and Mode 5 Community Task approach approved by both CID-FFT ESC and USD AT&L JFI. Led NATO FFT AHWG - provided US Head of Delegation. Developed CID Server STANAG to ensure NATO interoperability. Executed Joint Fire Support Executive Steering Committee (JFS ESC) actions. Conducted Joint Terminal Attack Controller (JTAC) Stan Team Initial Accreditation visits; staff assistance visits and Biennial Reviews of US and coalition partner schoolhouses. Advanced NATO/coalition partner JTAC MOA signatory requests. Revised Joint Fires Observer MOA. Updated JTAC Simulation Accreditation Criteria. Coordinated production of Joint Digitally-Aided Close Air Support TTP and developed DACAS assessment plans and engineering changes. Executed JFS Action Plan to include simplifying airspace coordination and deconfliction measures; obtained CJCS approval of Senior Leader and Strike Advisor Education emphasizing a better understanding of joint targeting; provided operational context to improve Collateral Damage Estimation methodology doctrine and standardize training; and facilitated establishment of standardized certification programs to permit delivery of precision-guided weapons. ***FY 2012 Plans:*** Continue execution of JFS/JCAS and CID-FFT 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. Planning for the BOLD QUEST 2013 Joint Operational Test Approach for Mark XII Mode Five Interoperability test.			
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	7.076	7.933	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

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 2011 Accomplishments:

- Developed Miniature Air Launched Decoy Jammer (MALD-J) Capability Production Document Architecture. MALD-J was approved by the JCB on 6 Sep 2011. Developed architectures for mission thread support to USCENTCOM, ISAF Joint Command and Joint Interoperability Test Command for testing of information exchanges on the Afghan Mission Network (AMN). Developed the analysis and architectures for a Coalition Warfare Program project that addresses interoperability issues for US and selected Troop Contributing multi-national partners operating in Afghanistan. Developed, coordinated and staffed the C2 On-the-Move Reference Architecture to address selected combatant commanders Integrated Priority List (IPL) issues and provided guidance to the Services that are developing a C2OTM capability. Updated the C2 On-The Move (C2OTM) Reference Architecture. Updated the JCSFL (V4.0) and ensure that program managers and capability developers incorporate the changes. Coordinated and worked with Service acquisition sponsors and program managers to incorporate the JCSFL into Service programs during the JCIDS process to ensure better joint integration. Reviewed and commented on emerging DoD policy addressing C2 capability and architectures and JCIDS document reviews for integration and interoperability and Net Ready Key Performance Parameter compliance. Provided analytical and architecture support to the C4/CYBER Functional Control Board for the Joint Tactical Radio System – Ground Mobile Radio for the Nunn-McCurdy breach. Developed prioritized information exchanges and data loads/ throughputs for the Joint Task Force (JTF) and subordinate joint headquarters in support of the Joint Aerial Layer Network (JALN) Analysis of Alternatives (AoA).

Architecture Driven Analysis (Joint Mission Threads):

- Completed development of seven of the thirty identified Joint Mission Threads (JMTs): Joint Close Air Support, Joint Personnel Recovery (JPR), Global Force Management, Joint Fires, Counter-Improvised Explosive Devises, Air and Missile Defense, and Integrated Tactical Warning/ Attack Assessment. The JMTs are being extensively reused by a variety of DoD communities and are providing much of the "operational context" that AT&L has identified as critical to future acquisitions. Continued to build web-enabled portal access to the Tier 1 JMTs for the testing, training, programming, program development, experimentation,

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
and modeling and simulation communities of interest, filling a critical void of documented JMTs. Supported Ballistic Missile Defense (BMD) Joint Warfighter Challenges by providing Tier 2 BMD JMTs supporting gap analysis and solution identification. Supporting Joint Personnel Recovery solution implementation across Services. Managed the Digitally Aided Close Air Support (DACAS) Change Control Board through completion of Block 1 Engineer Change proposal (ECP) implementation and beginning Block 2 ECP builds. Supporting 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. Joint Combat Capability Development Architectures: - Provided solutions architectures and analysis for the JCCD Joint C2 Capability Requirements Management process that define the relationships between warfighter needs, system/service functionality, authoritative data sources, and net-centric enterprise services. Specifically, in support of the Force Readiness PM, developed capability views (CVs), business process models (BPMs) and associated architecture analysis to establish a basis for the PM's decision process to manage warfighter requirements and planning for future capability development. Supporting the development of the Joint C2 Objective Architectures (v2.0 & v2.1) and Transition Architecture. Developed operational views (OVs) in support of CCD production of capability definition packages (CDPs) for joint C2 common user interface (Jc2 CUI), Multi-National & Other Mission Partners (MNMP) and Global Theater Security Cooperation Management Information System (G-TSCMIS). Joint Architecture Federation and Integration: - Enhanced Architecture Federation from a proof of concept to a web-based solution on both the NIPRNet and SIPRNet that will have approved architectures and associated data that enables capability developers and warfighter to access the information to help solve their challenges. Expanded 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). Deployed the initial operating capability production Joint Architecture Federation portal, the first DoDAF Metamodel (DM2) compliant web service enabled portal in support of OSD and DoD CIO architecture information sharing guidance. Developed processes and methodologies for exposure of Joint Mission Thread (JMT) products. Established web-enabled portal to expose base lined Tier 1 Joint Mission Thread Products. ***FY 2012 Plans:*** Joint Combat Capability Development Architectures:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Provide architecture and analysis support for joint C2 systems and Service systems joint integration in support of the Combat Capability Development. Develop Solutions architectures and perform analysis to determine capability development priorities, identify capability redundancies/gaps, and identify critical Joint C2 interoperability opportunities and requirements. Joint Force Architectures, Standards, and Analysis: Update the JTF architectures for joint force analysis baselines and joint strategic planning analysis and architectures. 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. Develop solutions architectures for JS J8 sponsored initiatives. Refine and expand the C2OTM Reference Architecture to include maritime and air OTM capabilities that interface and need to integrate with ground forces. Building on the work accomplished in FY11, update JCSFL (V5.0) as a Chairman, Joint Chiefs of Staff Manual and 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. Build on previous Coalition Warfare Projects and develop process models for Multinational Operations Logistics Chain Management. Assist in the final analysis of the JALN AoA. Federation: Continue ongoing FY 2011 efforts. 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 2011 JMTs become fully developed, begin work on six more Tier One JMTs based on JROC and FCB guidance. Continue to provide support to the Joint Warfighter Challenges by building Tier Two JMTs for gap analysis and solution identification. Continue efforts to enhance the capability to collaborate on, leverage and improve developed and developing JMTs. In addition, the Capability Engineering project is now incorporated under Joint Mission Threads. Continue to manage the DACAS Change Control Board Block One ECP implementation and begin Block Two ECP build and implementation. Continue to support JPRA in the coordinated implementation of command and control improvements across the Services, identifying and executing a Personnel Recovery ECPs. 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			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
the FY 2010 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.			
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 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 Accomplishments:*** Collaborative Staffing: This capability has enabled 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 Secretary of Defense (SECDEF) 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 FY 2010 GFMAP Annex D spreadsheet.	1.886	-	-
Title: Joint Blue Force Situational Awareness (JBFSA)	1.186	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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. ***FY 2011 Accomplishments:*** Developed 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.			
Title: Coalition Combat Identification (CCID) Advanced Concept Technology Demonstration (ACTD)/BOLD QUEST	3.987	-	-
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 through 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 2011 Accomplishments:*** The BOLD QUEST 2011 focused 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 established			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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. The BOLD QUEST 2011 footprint included 700 personnel, 25 fixed wing aircraft and 50 ground vehicles engaged in three weeks of day/night scenarios reflecting current operations. ***FY 2012 Plans:*** In FY 2012, this project is incorporated into Integrated Fires.			
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 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 2011 Accomplishments:*** Managed the DACAS Change Control Board through completion of Block 1 ECP implementation and begin Block 2 ECP builds. Continued 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 provided 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 2012, This project is incorporated into Joint Architecture Integration and Development .	4.138	-	-
Title: Capability Transition Management	1.087	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013

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 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 2011 Accomplishments:
Conducted 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
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

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
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; - Capabilities that improve centralized command, decentralized control for irregular / hybrid warfare units. ***FY 2011 Accomplishments:*** CWID 11 was conducted in venues hosted by the United States (U.S.), Canada and NATO to investigate technologies that enhance warfighting command and control (C2), improve the use of the Afghan Mission Network (AMN) in execution of coalition mission threads, enhance communications, intelligence, surveillance, reconnaissance (ISR) capabilities, and civilian first responder efforts. Overall 18 NATO and Partnership for Peace nations participated in, or observed CWID 11. Thirty-seven commercial, DoD and partner technologies (26 U.S. /8 Canadian/1 Italian/1 Finnish/1 Danish) participated in US CWID as interoperability trials (IT). More than 2480 individual assessment tasks supporting Information Assurance (IA), Technical Interoperability (IOP) and Warfighter Utility Assessments (WUA) were scheduled, 2182 were completed(completion rate was 88%). CWID 11 execution threads included: Coalition/Joint Fires Mission Threads involving the AMN architecture with coalition partners (Germany, France and Netherlands), expanded assessment of Sponsor Defined Requirements, increased cross-site	1.446	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
scenario interaction encouraged by the ISAF scenario, higher fidelity trial-to-network connectivity, improved network monitoring tools to improve quality of assessment data, incorporation of prior lessons learned, and improved situational awareness. ***FY 2012 Plans:*** Project Completed			
Title: Tranferred to Joint Staff Accounts ***Description:*** In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense (SECDEF) approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications. ***FY 2013 Plans:*** In FY 2013, funds will be transferred to Joint Staff Accounts dependant on the Secretary of Defense (SECDEF) approval of the governance plan. The governance plan is still under review in the Department. Once the governance plan is approved, this document will be updated with any changes to the Joint Experimentation Program plan for FY 2013, and beyond. The department will make the appropriate notifications.	-	-	-
Accomplishments/Planned Programs Subtotals	41.383	29.059	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Interoperability and Integration:

• Develop coordinated joint C4 operational assessments, tests and evaluations to identify, prioritize and document interoperability deficiencies that produce Component plans and actions to reduce or eliminate identified deficiencies.

• Provide mission capable solutions for joint interoperability and integration capability shortfalls to influence and resource joint C2 solutions.

Joint Fires:

• Provide situational awareness and cooperative / non-cooperative identification capabilities that enable U.S., NATO / coalition warfighters to identify friendly, enemy and neutral forces for “shoot/don’t shoot” decisions.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

• Synchronize Service testing, acquisition and fielding of Mode Five IFF capability, with an Initial Operating Capability (IOC) in FY 2014 and Full Operational Capability (FOC) in FY 2020.
• Complete Definition Package for Block Two of Digitally Aided Close Air Support (DACAS) coordinated implementation in conjunction with participating Service programs of record.
• Conduct Accreditation Biennial Visits for six Joint Terminal Attack Controller (JTAC) and 2 Joint Fires Observer (JFO) Schoolhouses.
• Monitor compliance for Mode Five IOC in FY 2014 and FOC in FY 2020
Interoperability and Integration:
• Develop coordinated joint C4 operational assessments, tests and evaluations to identify, prioritize and document interoperability deficiencies that produce Component plans and actions to reduce or eliminate identified deficiencies.
• Provide mission capable solutions for joint interoperability and integration capability shortfalls to influence and resource joint C2 solutions based on department's guidance.

Joint Fires:
• Provide situational awareness and cooperative / non-cooperative identification capabilities that enable U.S., NATO / coalition warfighters to identify friendly, enemy and neutral forces for “shoot/don’t shoot” decisions.
• Synchronize Service testing, acquisition and fielding of Mode Five IFF capability, with an Initial Operating Capability (IOC) in FY 2014 and Full Operational Capability (FOC) in FY 2020.
• Complete Definition Package for Block Two of Digitally Aided Close Air Support (DACAS) coordinated implementation in conjunction with participating Service programs of record.
• Conduct Accreditation Biennial Visits for six Joint Terminal Attack Controller (JTAC) and 2 Joint Fires Observer (JFO) Schoolhouses.
• Monitor compliance for Mode Five IOC in FY 2014 and FOC in FY 2020.

Combat Capability Development:
• Develop annual JROC approved plan to identify prioritized and synchronized capabilities sufficient for near-term development and fielding to warfighters (12-18 month delivery).
• Develop annual assessment of impacts on GCCS Joint & Service Family of Systems ($350M+ annual portfolio) to determine mission impacts in the geographic AORs.
• Develop, as required, JROC requirements documentation (ICDs, CDDs, CPDs, CDPs, CONOPs, MOEs/MOPs) sufficient for agile/flexible use by the acquisition community.

Architectures:
• Continue development of reusable architecture products to provide capability developers an upfront, operational/systems view at the enterprise level to support of capability acquisition, requirements generation, development, and testing.

Data

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

• Establish common C2 data and service standards and enables access to authoritative data assets in order to provide the warfighter timely access to critical information.

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

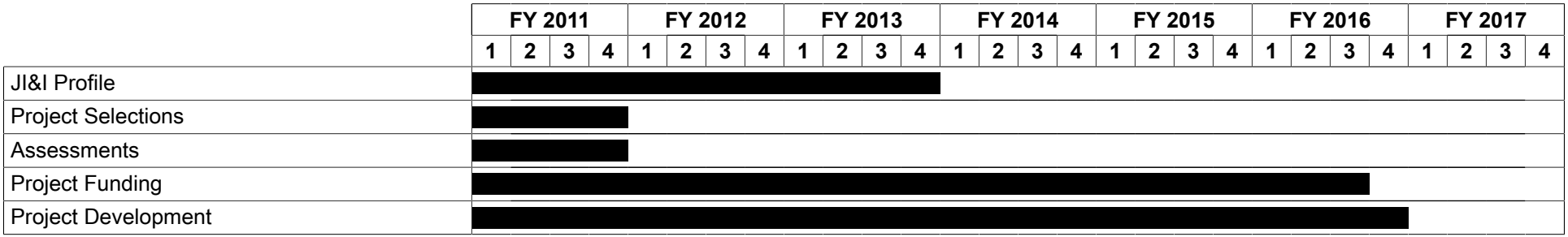

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0607828D8Z: *Joint Integration & Interoperability*	PROJECT P818: *Joint Integration & Interoperability*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JI&I Profile	1	2011	4	2013
Project Selections	1	2011	4	2011
Assessments	1	2011	4	2011
Project Funding	1	2011	3	2016
Project Development	1	2011	4	2016

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	13.658	11.352	11.780	-	11.780	12.163	12.433	12.514	12.741	Continuing	Continuing
140: *Information Systems Security Program*	13.658	11.352	11.780	-	11.780	12.163	12.433	12.514	12.741	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	14.077	11.753	11.703	-	11.703
Current President's Budget	13.658	11.352	11.780	-	11.780
Total Adjustments	-0.419	-0.401	0.077	-	0.077
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.419	-	0.077	-	0.077
• FFRDC Reduction	-	-0.078	-	-	-
• SBIR Reduction	-	-0.285	-	-	-
• STTR Reduction	-	-0.038	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011: Includes Studies Contractor Efficiency -1.169 million, Service Support Contract Efficiency -0.357 million, Program adjustment -0.419 million.
FY 2012: FFRDC reduction -0.078 million, SBIR reduction -0.258 million, STTR reduction -0.038 million.
FY 2013: Program Adjustment 0.077 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.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Information Systems Security Program Plans and Accomplishments	13.658	11.352	11.780
FY 2011 Accomplishments: • 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 demonstration, development and pilots focusing functions required in mid to long term increment of the IA Component of the GIG Architecture. • Developed central engineering in-depth concept of criticality analysis, and Concept of Operations for leveraging criticality analysis to guide use of intelligence resources to support the DoD trusted defense system strategy (including Software and Hardware Assurance). Applied criticality analysis within USD(AT&L) program protection planning engagements • Continued refinement of SAST (now called Zanthenon Inductive User Interface) 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. • Completed Phase I of Cyber Challenge, the Department's FY13 annual awareness training product. • 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. • Provided essential support to DoD Information Assurance (IA) Risk Management (RM) Transformation that included migrating the Defense IA RM process to comply with the mandated Federal (NIST) community RM standards, performing the functions			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
of the DIACAP TAG Secretariat IAW DoD 8510.01, supporting enterprise-wide IA RM automation (eMASS) requirements identification and implementation, and managing DoD's single, virtual, authoritative community of interest for DoD IA RM policies, activities, and initiatives known as the DIACAP Knowledge Service. • Developed the DoD Mobile Device Strategy and Roadmap, to include policy and IA capabilities necessary to support "end-to-end" IA capability for the GIG-including mobile enterprise services such as discovery, collaboration, messaging, mediation, data tagging, etc. Support mobile technology demonstrations, development and pilots focused on functions required in mid to long term increment of the IA Component of the GIG Architecture. • Developed and refined the DoD policy for Digital Persona Protection to include the construction of an implementation plan based on the final policy to support workforce protection awareness, education and training throughout the department. • Researched and developed DoD policies related to wireless, emerging technologies and mobile computing while to ensure the security standards and policies are implemented with legacy and cutting edge technologies in mind throughout their entire life-cycle. • Provided IA Mobile Enterprise Services support in the development of DoD-enterprise cloud computing adoption strategy as the DoD Mobile Device Strategy and Roadmap will work in lockstep with the cloud computing strategy. • Delivered two DoD level signed policies: DoD Instruction 8520.02 "PKI and PK-Enabling" and a new DoD Instruction 8520.03- "Identity Authentication." The new policies commit the Department to adopt the use of PKI-based capabilities internally in business processes and externally with DoD commercial partners and require DoD systems to use stronger authentication solutions, reducing anonymity on DoD networks. • Lead the DoD SHA-256 Migration Coordination Cell. Support development and implementation of the SHA-256 Cryptographic migration plan. The migration plan directs transitioning the DoD IT infrastructure to support the use of the SHA-256 hash algorithm. • Developed processes to quickly identify the alignment of DoD Components networks and information systems to a certified and accredited CNDSP in accordance with the Department of Defense Directive (DoDD) 8530.1. • Evolved and document the assessment methodology for conducting Measures of Effectiveness (MOE) of CNDSPs and apply across the DoD to assess the quality and effectiveness of CND services coverage over specific DoD component networks and information systems.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
• Expanded the International Cyber Defense Workshop bi-annual events to cover two time zone and more nations; operationalized IA/CND relationships with France, Sweden and Poland. • Developed and circulated of Cloud Security Architecture to compliment the Defense Cloud Strategy • Continued to assess and design solutions to enhance the resiliency of the GIG, including the analysis of communications paths, and the design of robust DoD systems to withstand sophisticated cyber attacks and cyber outages. • Continued to develop capabilities to enhance cyber awareness throughout the GIG, including the delivery of enterprise network mapping and leak detection system (ENMLDS) capabilities. • Lead in the augmentation of the C&A process to leverage the NIST 800-53 security controls, and collaborate with members of the Intelligence Community in the development of cross-community security profiles to aid in the accreditation of systems across the DoD and IC. ***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 demonstration, development and pilots focusing functions required in mid to long term increment of the IA Component of the GIG Architecture. • Continue to provide essential support to DoD Information Assurance (IA) Risk Management (RM) Transformation that includes migrating the Defense IA RM process to comply with the mandated Federal (NIST) community RM standards, performing the functions of the DIACAP TAG Secretariat IAW DoD 8510.01, supporting enterprise-wide IA RM automation (eMASS) requirements identification and implementation, and managing DoD's single, virtual, authoritative Community of Interest (known as the DIACAP Knowledge Service) for DoD IA RM policies, activities, and initiatives. • Further develop, refine and deploy criticality analysis in support the DoD trusted defense system strategy (including Software and Hardware Assurance). • Complete Phases 3 & 4 of the Zanthenon Inductive User Interface (formerly known as SAST) GUI to enhance ease of use and permit independent development, testing and maintenance of T&E, training and exercise scenarios. Improvements will support joint exercises, the Department’s international exercise program, and capstone events at Service schools.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
• Pilot ICDW-like training exercise for DoD agencies. • Complete Phase II of Cyber Challenge, the Department's FY 2013 annual awareness training product. • Automate CEMAT capabilities in the IA Range. • Develop 508 solution for VTE content. • Continue refinement of the DoD Mobile Device Strategy and Roadmap, to include policy and IA capabilities necessary to support "end-to-end" IA capability for the GIG-including mobile enterprise services such as discovery, collaboration, messaging, mediation, data tagging, etc. Support mobile technology demonstrations, development and pilots focusing functions required in mid to long term increment of the IA Component of the GIG Architecture. • Further develop and refine the DoD policy for Digital Persona Protection to include the construction of an implementation plan based on the final policy to support workforce protection awareness, education and training throughout the department. • Continue to refine and update DoD policies related to wireless, emerging technologies and mobile computing while to ensure the security standards and policies are implemented with legacy and cutting edge technologies in mind throughout their entire life-cycle. • Continue to provide IA Mobile Enterprise Services support to further develop and refine the DoD-enterprise cloud computing adoption strategy as the DoD Mobile Device Strategy and Roadmap will work in lockstep with the cloud computing strategy. • Support and monitor implementation of the SHA-256 Cryptographic migration. • Provide policy and guidance for the use of Federal PIV and non-Federal PIV-I credentials within the DoD for mission applications and business functions. • Respond to inquiries from DoD Customers and Information system owners regarding DoD PKI and Identity Management policy and guidance. • Collaborate with CYBERCOM to develop implementation guidance for DoD PKI and Identity Management policy.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
• Improve the International Cyber Defense Workshop virtual environment by moving the portals and SAST to the .mil domain; conclude information sharing agreement with Finland and provide more IA/CND information in releasable form to all formal international partners (NATO, FVEY, Japan, ROK, Singapore, France, Germany, Poland, Sweden).			
FY 2013 Plans: • Develop products and test tools for a comprehensive cybersecurity awareness program. • Extend ICDW-like training exercises to all DoD agencies. • Continue Zanthenon GOTS API/SDK enhancements. • Continue to provide essential support to DoD Information Assurance (IA) Risk Management (RM) Transformation that includes migrating the Defense IA RM process to comply with the mandated Federal (NIST) community RM standards, performing the functions of the DIACAP TAG Secretariat IAW DoD 8510.01, supporting enterprise-wide IA RM automation (eMASS) requirements identification and implementation, and managing DoD's single, virtual, authoritative Community of Interest (known as the DIACAP Knowledge Service) for DoD IA RM policies, activities, and initiatives. • Continue refinement of the DoD Mobile Device Strategy and Roadmap, to include policy and IA capabilities necessary to support "end-to-end" IA capability for the GIG-including mobile enterprise services such as discovery, collaboration, messaging, mediation, data tagging, etc. Support mobile technology demonstrations, development and pilots focusing functions required in mid to long term increment of the IA Component of the GIG Architecture. • Further develop and refine the DoD policy for Digital Persona Protection to include the construction of an implementation plan based on the final policy to support workforce protection awareness, education and training throughout the department. • Continue to refine and update DoD policies related to wireless, emerging technologies and mobile computing while to ensure the security standards and policies are implemented with legacy and cutting edge technologies in mind throughout their entire life-cycle. • Continue to provide IA Mobile Enterprise Services support to further develop and refine the DoD-enterprise cloud computing adoption strategy as the DoD Mobile Device Strategy and Roadmap will work in lockstep with the cloud computing strategy. • Develop Advanced Persistent Threat (APT) data standards and data collection capabilities			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
• Pilot NIPRNet – Internet isolation capabilities. • Expand scope of International Cyber Defense Workshop to include more training modules and expanded IA range capabilities in SAST model; develop web portals for classified FVEY information sharing and methodologies for releasing IA/CND information to formal partners in near real time.			
Accomplishments/Planned Programs Subtotals	13.658	11.352	11.780

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0303140D8Z: *Information System Security Program*	26.043	13.772	13.021		13.021	12.947	13.195	13.673	106.576	Continuing	Continuing

E. Acquisition Strategy

N/A

F. Performance Metrics

- Zanethenon improvements available as a core enterprise IA/CND simulation tool
- CEMAT effectively supports T&E community data collection, reduction analysis and reporting.
- 508 solution available for VTE content.
- Cyber Challenge used DoD-wide.
- DoD agency CIOs report ICDW-like training exercises are valuable tool to enhance cybersecurity skills of personnel.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303260D8Z: *Defense Military Deception Program Office*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	1.129	1.206	1.294	-	1.294	1.254	1.090	1.119	1.139	Continuing	Continuing
891: *Defense Military Deception Program*	1.129	1.206	1.294	-	1.294	1.254	1.090	1.119	1.139	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Defense Military Deception Program (DMDP) is an effort to revitalize DoD military deception planning and execution capability in the combatant commands. The Defense Military Deception (MILDEC) Program Office (DMDPO) provides oversight, guidance, and program management support for Defense MILDEC education, training, career force management, planning and operational employment of MILDEC in Defense military operations. RDT&E funds support development of next generation devices and capabilities.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	1.161	1.241	1.290	-	1.290
Current President's Budget	1.129	1.206	1.294	-	1.294
Total Adjustments	-0.032	-0.035	0.004	-	0.004
• Congressional General Reductions	-	-0.008			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.022	-0.027			
• Congressional adjustment	-0.010	-	-	-	-
• Department adjustment	-	-	0.004	-	0.004

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Defense Military Deception Program	1.129	1.206	1.294
Description: DMDP is an effort to revitalize DoD military deception planning and execution capability in the combatant commands. The DMDPO 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 support development of next generation devices and capabilities.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303260D8Z: *Defense Military Deception Program Office*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
FY 2011 Accomplishments: -Established a contract vehicle to provide MILDEC capabilities, attributes, and services that support the Office of the Under Secretary of Defense (Intelligence), the Military Services, DoD, and other Federal Agencies. -Initiated the assessment process of current and emerging technologies within the Joint Capabilities Techonology Demonstration pipeline for next generation devices and capabilities. ***FY 2012 Plans:*** -Identify emerging technologies and explore scientific research concepts to develop future military capabilities. -Conduct assessment to help guide DoD investment strategy; pave the way for new partnerships to collaborate on technical development; and identify opportunities to influence design early in the acquisition life cycle for military technology programs. -Conduct a technical assessment on global technology advancements in the areas such as electronic warfare and others as identified by the Science & Technology net assessment program in fiscal years 2010 and 2011. ***FY 2013 Plans:*** Continue to acquire support for the experimentation, test, and evaluation of new MILDEC devices, decoys, tools, and technologies.			
Accomplishments/Planned Programs Subtotals	1.129	1.206	1.294

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0303260D8Z O&M DW: *Defense Military Deception Program Office*	2.829	4.458	4.956		4.956	5.857	6.621	6.818	6.954	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 (FAR), 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

• 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0303260D8Z: *Defense Military Deception Program Office*

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 MILDEC community.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	0.496	0.411	-	-	-	-	-	-	-	Continuing	Continuing
371: *Cyber Security Initiative*	0.496	0.411	-	-	-	-	-	-	-	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	0.501	0.411	0.403	-	0.403
Current President's Budget	0.496	0.411	-	-	-
Total Adjustments	-0.005	-	-0.403	-	-0.403
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.005	-	-	-	-
• Reprogramming	-	-	-0.403	-	-0.403

Change Summary Explanation

FY 2012: No change.

FY 2013: Funding reprogrammed to O&M to support National Initiative for Cybersecurity Education -0.403 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0305103D8Z: *Cyber Security Initiative*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Cyber Security Initiative	0.496	0.411	-
FY 2011 Accomplishments: •Details provided at higher classification under separate cover.			
FY 2012 Plans: •Details provided at higher classification under separate cover.			
FY 2013 Plans: •Details provided at higher classification under separate cover.			
Accomplishments/Planned Programs Subtotals	0.496	0.411	-

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0305103D8Z: *Cyber Security Initiative*	3.149	17.348	24.221		24.221	11.232	11.426	11.616	11.726	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 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	10.382	12.818	10.462	-	10.462	9.814	10.133	8.396	8.547	Continuing	Continuing
125: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*	10.382	12.818	10.462	-	10.462	9.814	10.133	8.396	8.547	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 DODD 3020.40, 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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	10.486	13.008	12.480	-	12.480
Current President's Budget	10.382	12.818	10.462	-	10.462
Total Adjustments	-0.104	-0.190	-2.018	-	-2.018
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.009	-0.103			
• Other Program Adjustments	-0.095	-0.087	-2.018	-	-2.018

Change Summary Explanation

Other adjustments in FY 2011 due to contractor support reductions; Current changes in FY 2012 are due to SBIR, STTR and SS 8023(f). Changes in FY 2013 reflect contractor support reductions, and to centralized contracting functions.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
125: *CRITICAL INFRASTRUCTURE PROTECTION (CIP)*	10.382	12.818	10.462	-	10.462	9.814	10.133	8.396	8.547	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.

Each Defense Sector Lead Agent, as identified in DoDD 3020.40, 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 DpD 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 2011	FY 2012	FY 2013
Title: DCIP	10.382	12.818	10.462
FY 2011 Accomplishments: - Developed, leveraged, maintained, and enhanced 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 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
- Provided 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. - Applied 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 ***FY 2013 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. - 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	10.382	12.818	10.462

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0902198D8Z: *Critical Infrastructure Protection*	17.475	7.582	7.582		7.582	7.582	7.582	7.582	7.582	7.582	7.582

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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)*

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	5.304	6.520	6.360	-	6.360	6.314	6.244	4.758	4.794	Continuing	Continuing
186: *Policy R&D Programs*	5.304	6.520	6.360	-	6.360	6.314	6.244	4.758	4.794	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	9.136	6.603	6.491	-	6.491
Current President's Budget	5.304	6.520	6.360	-	6.360
Total Adjustments	-3.832	-0.083	-0.131	-	-0.131
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.053	-0.039			
• Other Program Adjustments	-3.733	-0.044	-0.131	-	-0.131
• Economic Assumptions	-0.046	-	-	-	-

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.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
186: *Policy R&D Programs*	5.304	6.520	6.360	-	6.360	6.314	6.244	4.758	4.794	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 2011	FY 2012	FY 2013
Title: International Technologies	1.911	2.887	2.823

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 2011 Accomplishments:

- Researched process tools to integrate the military in non-combative situations globally
- Promoted homeland defense initiatives with dual application worldwide in US military operations
- Developed research efforts within the Services and Combatant Commands to better analyze, modify, design, and demonstrate enduring counterinsurgency technical and operational capabilities.
- Researched military competition among nations in the Middle East and highlight potential capabilities and policies each nation may utilize in future armed conflicts
- Developed strategies 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
- Enhance strategies and relationships with European nations based on the exchange of information through education opportunities and existing policies

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
• 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 ***FY 2013 Plans:*** • Continue Development of 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: Long Term Competitions (LTC) Program ***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 2011 Accomplishments:*** Specific efforts are classified. ***FY 2012 Plans:*** Specific efforts are classified. ***FY 2013 Plans:*** Specific efforts are classified.	2.116	1.933	1.875
Title: Defense Planning Scenarios Activities	1.277	1.700	1.662

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Description: This program is classified. ***FY 2011 Accomplishments:*** Specific efforts are classified. ***FY 2012 Plans:*** Specific efforts are classified. ***FY 2013 Plans:*** Specific efforts are classified.			
Accomplishments/Planned Programs Subtotals	5.304	6.520	6.360

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 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	11.162	14.432	21.190	-	21.190	21.778	22.184	18.429	18.764	Continuing	Continuing
199: *GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities*	11.162	14.432	21.190	-	21.190	21.778	22.184	18.429	18.764	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 $180 billion. 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 FY 2010/2011 funding disconnect resulted from duplicate cuts to a program titled Horizontal Fusion (HF) formerly part of this PE to support priority net centric transformation.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	29.831	14.926	24.806	-	24.806
Current President's Budget	11.162	14.432	21.190	-	21.190
Total Adjustments	-18.669	-0.494	-3.616	-	-3.616
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-15.000	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-0.436	-	0.118	-	0.118
• Studies Contract Efficiency	-2.477	-	-	-	-
• Service Support Contract Efficiency	-0.756	-	-	-	-
• FFRDC Reduction	-	-0.100	-	-	-
• SBIR Reduction	-	-0.347	-	-	-
• STTR Reduction	-	-0.047	-	-	-
• Transfer	-	-	-3.734	-	-3.734

Change Summary Explanation

FY 2011: Congressional Reduction -15.000 million, Studies Contract Efficiency -2.477 million, Service Support Contract Efficiency -0.756 million, Program adjustment -0.436 million.
FY 2012: FFRDC reduction -0.100 million, SBIR reduction -0.347 million, STTR reduction -0.047 million.
FY 2013: Disestablishment of ASD(NII) Efficiency – transfer acquisition related functions to AT&L PE 0604771D8Z -12.337 million, transfer in communications and information networks architecture; strategy and policy; and frequency spectrum analysis and management functions from ASD(NII) PE 0604771D8Z 8.603 million, Program Adjustment 0.118 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.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Net Centricity Plans and Accomplishments	11.162	14.432	21.190
FY 2011 Accomplishments:			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Led 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). – Designed the integrated master schedule to analyze portfolio capability schedules and dependencies between programs to capture critical programmatic operational and developmental dependencies. – Developed a tactical radio strategy to meet the demand of the Combined Joint Force (CJF) Commander. – Developed DoD SATCOM roadmaps (narrowband, wideband, and protected) including MILSTAR, AEHF, terminals, gateways, and waveforms. – Defined 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. – Defined 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. – Provided Crypto Modernization responsibilities by developing the Crypto Modernization Management Charter. – Developed 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. – Performed systems engineering for technical baseline compliance, information assurance, and tactical networking using the Quantifiable Capability Delivery Increment (QCDI) updates. – Provided specific engineering and analysis to ensure communications programs are complying with Department net-centric guidance through forums such as the Narrowband SATCOM Systems Engineering radio modernization , and satellite synchronization Groups. – Developed a prototype COCOM C4 architecture and analyze their end-to-end tactical network management systems. – Developed Afghan Mission Network transport requirements; defined battlespace functions; decreased/minimized demand of and capacity allocated to multiple network environments. – Defined interoperability net centric gaps to be filled by technology. Determined appropriate technology and operational impacts. – Performed legacy waveform migration analysis to select optimum waveforms for warfighter interoperability and DoD cost reduction; conducted dynamic spectrum performance modeling and threat assessment to determine appropriate application within DoD networks; created plan for investments into new, more efficient, more flexible waveforms to ensure interoperability and performance standards within DoD are met. – Developed capability to effectively measure and monitor defense programs' bandwidth requirements to ensure that bandwidth needed to support such programs. – Conducted 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. – Evolved data interoperability standards to promote interoperability in the GIG Technical Guidance (GTG).			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Developed and executed a Joint Capability Technology Demonstration to address tactical and operational data strategy implementation and integration for expanded Command and Control net-centric data strategy capabilities. – Provided technical analysis for evolution of Joint Command and Control (C2) programs, program/acquisition strategies and functional requirements. Developed the Joint C2 Capability Analysis of Alternatives and Insights from the Command and Control Analysis of Alternatives. ***FY 2012 Plans:*** – Assess aerial layer waveforms (Link-16, TTNT, CDL) for cost and complexity in implementation . Identify technologies and platform architectures that enable improved performance and lower technology insertion costs for advanced tactical data. – Direct DoD efforts to develop and test proposed JALN modifications and developing ATDL technologies with greater system throughput and performance in future operational environments; assess Service plans to field systems to support JALN with ATDLs; and assess any additional allied participation alternatives for JALN architectures and ATDL networks. Working with ASD(R&E), coordinate the planned technology developments to address communications shortfalls and ensure support of joint interoperable solutions that are technically effective and financially sound. Working with the services incorporate the ATDL and JALN recommendations to provide the warfighters with effective communication systems. – Continue the expansion of the TDES community participation including the incorporation of the ATDL with the associated gateway efforts and enhanced joint, allied and coalition partnership within the JTMP process to facilitate Joint TDES migration. – Further refine, develop and 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 Continue to analyze and propose solutions for Generation 4 to 5 advanced data link interoperability. – Continue to model and similar various coalition aerial networks, sowing interoperability between US aircraft in US only nets, US aircraft in coalition networks and allied aircraft. – Implement the joint Interoperability Enhancement Process (IEP) with the joint to define and plan the expansion of TDES technologies to include tactical information integration and configuration management with Link 16, VMF, CDL and MADL; continue to develop policy-based network management preferred system concept and methodology for enterprise situational awareness. – Finalize the 2011 TDES migration plan and start draft of 2013 plan. Enhance modeling and simulation capability to support data link technical and operational capability assessments including integration to other component of the GIG. – Lead advanced tactical link assessment . Update the Joint Tactical Data Enterprise Services (TDES) migration plan for 2012. Establish the Joint Interoperability Enhancement Process. Conduct JALN implementation analysis. Provide dtalink migration engineering support. Conduct advanced waveform analysis of Gen 4/5 aircraft. – Analyze Gen 4-5 fighter/bomber waveform modification (MADL). Model advanced tactical datalinks. Develop a MADL waveform standard specification. Analyze MADL and link 16 gateway capabilities.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Work with the Intelligence, Surveillance, and Reconnaissance (ISR) community to define a set of non-duplicatve CDLs for joint use. – 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. – Refine the DoD Radio and COMSEC roadmap to incorporate department changes. – 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 analysis for technical baseline compliance, information assurance, and tactical networking. – Combine the Narrowband, Protected and Wideband SATCOM synchronization matrix data calls with the NS4R data calls to better accomplish program planning and data integration. – Develop a Crypto modernization migration strategy for Nuclear and general force C2 systems. – 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. – Develop 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. – Continue 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. – 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.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Perform analysis of technical capabilities to support the ASSIST RFP development and assessment. – Conduct analysis to support congressional direction to develop an expedited process for the design and acquisition of cyber capabilities in the Department. – Provide technical analysis for evolution of Joint C2 programs, program acquisition strategies and functional requirements. Develop technical trade-offs to include cost analysis, for rapid transition of Global Command and Control System Family of Systems and other relevant C2 capabilities (applications, data and services) required to support future command and control of joint task forces across the range of military operations. – Develop Spectrum Data Community of Interest to advance electromagnetic spectrum operations by improving the collection, exposure and sharing of spectrum related data across the GIG. – Continue development of a Global Electromagnetic Spectrum Information System (GEMSIS), transforming spectrum operations from a preplanned and static frequency assignment system into a responsive and agile capability to request, assign, allocate, and deconflict portions of the electromagnetic spectrum; providing an integrated approach to electromagnetic spectrum, enabling C2 access to spectrum situational information and providing spectrum efficiency and effectiveness enhancements to JTRS and integration of spectrum consideration to networking protocols. – Perform detailed feasibility studies, band analysis, operational impact studies and cost estimates in response to future domestic and global spectrum reallocations that might inhibit the DoD's ability to complete its warfighting mission. – Refine the DoD radio strategy and establish a working group with the services. Develop and populate an ACCESS database for radios and COMSEC. Combine SATCOM and SATCOM terminal data calls with the NS4R and drive toward a single overarching report. Update existing SATCOM synch matrices to reflect changes in department funding, emerging systems/technology and JALN AOA recommendations. – Conduct joint network modeling and network design for Army, USMC, Air Force brigade, MEB and wing. Provide analysis of SATCOM systems in support of the RBSC effort. Conduct a MUOS alternative study to determine a technical solution for getting the most out of the MUOS payload side of the satellite through modifications at the NAF and with, ground terminal mods. This effort will include waveform options, cost and schedule impacts. Through a FFRDC host radio industry technology forums to review current, future radio technology and industry trends. – Perform cyber CND analysis for tactical networks, resiliency based satellite analysis, secure voice telephone modeling replacement, analysis to determine options for extending enterprise services to the tactical edge, current waveform capabilities and functions and evolutionary strategy for 2 MHz – 2 GHz. – Develop a common set of interface standards to minimize the network management complexity in tactical communication networks. Support the development of a DoDI for NETOPS. Develop a strategy for improving integration of network situational awareness, management and control across the DISN. – Analyze the use and feasibility of NET FPGA technology as a layer 3 solution for the Soldier Radio Waveform (SRW) as a future enhancement. Conduct analysis and performance modeling for implementation on tactical networks, Capabilities document to determine what can be removed to facilitate an alternative solution.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Develop an initial roadmap for C2 information sharing with multi-national mission partners. – Multi-National Information Sharing : Provide C2 policy support and technical analysis with emphasis on coalition C2 and Multi-National Information Sharing. – Provide technical analysis and develop trade-offs for evolution of C2 information sharing policies, strategies and functional requirements to support continued development and delivery of Coalition C2 and C2 Information Sharing capability metrics and mechanisms. – Pursue a C2 research project to improve the state of the art of Agile C2. Develop and operationalize net enabled C2 and Agile C2 as described in the NATO NEC C2 Maturity Model. Satisfy requirements for technical assistance in support of the DoD C2 Operational Agility Research Initiative. – Develop communications waveform policy technical assessments, waveform specification database and technical analysis to support waveform policy oversight. – Develop wireless architecture and advanced technologies analyses, technical analyses in waveform policy oversight, COMSEC/ TRANSEC guidance for spectrum dependent systems and spectrum technology radar analyses. – Provide technical analyses on network management to include cyber and spectrum issues and develop a network management strategy roadmap. – Provide DoD wireless communications support analyses and program oversight for airborne ISR encryption policy to enclude an encryption implementation plan, technical support to land mobile radio policy and technical engineering support for wireless efforts. – Develop approaches for security policy for dynamic spectrum access systems, identify new strategies and policies for more efficient and effective use of spectrum and prioritize alternative spectrum use options for each spectrum band. – Develop wideband SATCOM architecture and policy, support DoD CIO participation on the Joint SATCOM panel, support the JSCL AOA relative to wideband SATCOM architecture and finalize the JIPM evolution and deployment strategy. – Provide engineering and technical expertise and analytic support for the Ten Year Plan and DoD Long-term Spectrum Strategy and spectrum relocation analyses. – Develop Engineering analysis, including secure voice conferencing, to support the total replacement of the Defense Red Switch Network (DRSN) in the DoD.			
FY 2013 Plans: – Expand the Radio and COMSEC modernization roadmap to include 3rd party for MUOS tactical terminals developers. – Define network capability, based on the approved JSLC AoA to include in the Combined Joint Operational Area (CJOA) to meet the demand of the Combined Joint Force (CJF) Commander. – Perform systems engineering analysis for technical baseline compliance, information assurance, and tactical networking for commercial alternatives to MILSATCOM including commercial alternatives.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
– Update the DoD Narrowband SATCOM Synchronization matrix to include meeting MUOS terminal Deliveries, red-black waveform availability and legacy terminal upgrades. – Update the DoD Protected SATCOM roadmap to address recommendations of the JSCL AoA to include the space layer, fixed terminal and mobile tactical terminal segments. – Determine requirements for future upgrades to MUOS to including anti- jam improvements. – Define implications of MUOS performance enhancements including increased capacity UHF data capabilities and full duplex operations on operational forces. – Perform analysis of identify management and assurance solutions for network edge devices that integrate with current PKI solutions. – Establish COCOM Mission Network transport requirements; define battle space functions; decrease/minimize demand of and capacity allocated to multiple network environments – Analyze potential solutions to provide anti-jam satellite communications utilizing a commercial satellite bus. Analysis includes identifying NC2 and other military unique capabilities that may not be appropriate for a commercial based solution. – Develop Integrated Master Schedule update for new program initiatives funded in FY 2013. – Analyze communications options for UAV out of band control requirements. – Assess the capability to effectively measure and monitor new 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 in support of the DoD acquisition process. – Update Wideband and Protected SATCOM synchronization matrices to reflect programmatic decisions regarding implementing KMI in applicable programs including protected SATCOM. – Develop and operationalize the C2 Vision embodied in the DoD C2 Strategic Plan and incorporate "Agile C2" into elements of the operational force. – Execute technical analysis on spectrally efficient technologies, sharing techniques, and regulatory alternatives to increase efficient use of spectrum technologies. – Provide technical solutions to integrate spectrum resources and optimize electromagnetic systems that use spectrum resources in the tactical environment. – 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 projected acquisition efforts for 300MHz – 3.5 GHz and 3.5 GHz – 6 GHz bands. – Develop Spectrum Data Community of Interest to advance electromagnetic spectrum operations by improving the collection, exposure and sharing of spectrum related data across the GIG. – Continue development of a Global Electromagnetic Spectrum Information System (GEMSIS), transforming spectrum operations from a preplanned and static frequency assignment system into a responsive and agile capability to request, assign, allocate,			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
and deconflict portions of the electromagnetic spectrum; providing an integrated approach to electromagnetic spectrum, enabling C2 access to spectrum situational information and providing spectrum efficiency and effectiveness enhancements to JTRS and integration of spectrum consideration to networking protocols. – Perform detailed feasibility studies, band analysis, operational impact studies and cost estimates in response to future domestic and global spectrum reallocations that might inhibit the DoD's ability to complete its warfighting mission. – Update the Joint TDES Migration Plan 2013 update to include: Interoperability enhancement process, digitally aided close air support, multi function advanced data link joint migration, in flight data link gateways and NADL migration; NATO TDES migration plan. – Start development, integration and fielding of the recommended systems for JALN implementation of AoA recommendations and support of follow on efforts including future ATDL with R&E and DARPA; NATO narrowband, wideband and cooperative developments. – Conduct analysis and redevelop CDL migration plan, support ISR and UAS task force interoperability and migration recommendations. – Conduct design implementation roadmap for ground support systems, ground terminals air layer systems, air layer platforms resulting from JLAN AoA decisions. – Conduct additional analysis to validate development of CDL backbone and IA technologies. – Provide technical analysis of waveform applications and make disposition recommendations; build and maintain approved waveform specification database (SIPR), and apply technical analysis in waveform policy oversight, and develop, coordinate, and complete LMR deliverables. – Bandwidth Assessment: Conduct analysis on process pilots throughout DoD and apply analysis to DoD policy. – Network Management: Provide technical analysis to include cyber and spectrum issues and develop network management strategy roadmap to support DoD Policy. – Wireless Architecture and Advanced Technologies: Conduct and apply technical analysis in policy recommendations and in waveform policy oversight; and develop COMSEC/TRANSEC guidance for spectrum dependent systems.			
Accomplishments/Planned Programs Subtotals	11.162	14.432	21.190

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305199D8Z: *Net Centricity*

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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	2.934	2.631	2.303	-	2.303	2.353	2.419	2.451	2.496	Continuing	Continuing
387: *Homeland Defense Technology Transfer Program*	2.934	2.631	2.303	-	2.303	2.353	2.419	2.451	2.496	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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	2.988	2.660	2.662	-	2.662
Current President's Budget	2.934	2.631	2.303	-	2.303
Total Adjustments	-0.054	-0.029	-0.359	-	-0.359
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-0.011			
• Other Adjustments	-0.054	-0.018	-0.359	-	-0.359

Change Summary Explanation

FY 2011 other adjustments due to USD(P) studies reductions; FY 2012 reflects previous Service Support Contracts and current Section 8023(f), SBIR, and STTR adjustments. FY 2013 and out reflects contractor support reductions.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Homeland Defense Technology Transfer Program	2.934	2.631	2.303
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 the respective component. Provided information to stakeholders on equipment and technology use and availability. Funding was previously in PE 0305186D8Z.			

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013
FY 2011 Accomplishments: • Conducted the technology transfer program in a consolidated environment. • Finalized most metrics for continued use in program success. • Used a consortium of subject matter experts/governance council to prioritize technology transfer requirements. • Continued 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. • Pursue excess equipment transfer capabilities from overseas contingency operations. ***FY 2013 Plans:*** • Implement efficiencies. • Use a consortium of subject matter experts/governance council to prioritize technology transfer requirements. • Continue program outreach programs, prioritize outreach to reflect efficiencies. • Pursue excess equipment transfer capabilities from overseas contingency operations. • Develop revised metrics.			
Accomplishments/Planned Programs Subtotals	2.934	2.631	2.303

D. Other Program Funding Summary ($ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

As stated.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	1.403	1.444	1.478	-	1.478	1.524	1.568	1.611	1.640	Continuing	Continuing
997: *International Intelligence Technology and Architectures*	1.403	1.444	1.478	-	1.478	1.524	1.568	1.611	1.640	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 virtual advanced analytics, algorithmic data fusion, and multi-level security cross domain technologies into an integrated US, North Atlantic Treaty Organization (NATO), and coalition intelligence service oriented architecture/data repository such as the US and NATO Battlefield Information Collection and Exploitation System(s) (BICES). Provides for rapid implementation of US BICES capabilities into the Distributed Common Ground/Surface System (DCGS) and the Defense Intelligence Information Enterprise (DI2E) intelligence 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 US BICES as the "enduring" coalition intelligence support element of the DI2E. Continue the development of the Trusted Network Environment multi-level security database, web, and e-mail capabilities for U.S. Central Command (CENTCOM), U.S. European Command (EUCOM), U.S. Africa Command (AFRICOM), and U.S. Pacific Command (PACOM).

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	1.416	1.444	1.473	-	1.473
Current President's Budget	1.403	1.444	1.478	-	1.478
Total Adjustments	-0.013	-	0.005	-	0.005
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Department adjustment	-0.001	-	0.005	-	0.005
• Congressional adjustment	-0.012	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
997: *International Intelligence Technology and Architectures*	1.403	1.444	1.478	-	1.478	1.524	1.568	1.611	1.640	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 virtual advanced analytics, algorithmic data fusion, and multi-level security cross domain technologies into an integrated US, NATO, and coalition intelligence service oriented architecture / data repository such as the US and NATO BICES. Provides for rapid implementation of US BICES capabilities into the DCGS and the DI2E intelligence decision applications and data mechanisms in support of USD(I)'s mission to ensure necessary intelligence information is being acquired, analyzed, and disseminated rapidly among our allies and coalition partners. Develop US BICES as the "enduring" coalition intellligence component of the DI2E. Continue development of the Trusted Network Environment multi-level security database, web, and e-mail capabilities for US BICES.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: International Intelligence Technology and Architectures	1.403	1.444	1.478
FY 2011 Accomplishments: Researched method of utilizing widget based advanced analytics applications to transfer data utilizing developing metadata structures and cloud technology into existing US, NATO, and coalition networks supporting on-going operations in support of counter-terrorism. Developed processes for incorporating Multi-National Information Sharing (MNIS) functional capabilities.			
FY 2012 Plans: Continue development of applications and architectures to incorporate multi-level security (Oracle Trusted Cross Domain Systems) capabilities for bi-lateral and multi-lateral data dissemination and discovery capabilities into existing US, NATO, and coalition networks supporting on-going Special Operations Forces (SOF) and conventional operational intelligence needs. Continue research of potential cloud architectures for US BICES in-line with NATO cloud standards. Initiate DI2E integration research. Begin migration to federated multi-level security capabillities.			
FY 2013 Plans: Continue migration of federated architectures to incorporate multi-level security (Oracle Trusted Cross Domain Systems) capabilities for bi-lateral and multi-lateral data dissemination and discovery information sharing techniques into existing US, NATO, and coalition networks supporting on-going SOF and conventional operational intelligence needs. Incorporate design of DI2E capabilities for US BICES. Continue US BICES application integration.			
Accomplishments/Planned Programs Subtotals	1.403	1.444	1.478

Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0305600D8Z Proc DW: *International Intelligence Technology and Architectures*	20.027	28.476	17.582		17.582	17.097	16.736	15.779	16.100	Continuing	Continuing
• 0305600D8Z O&M DW: *International Intelligence Technology and Architectures*	86.370	126.337	67.327		67.327	65.739	64.066	60.973	62.250	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. Research and Development will provide increased intelligence information sharing capabilities in support of US and coalition forces utilizing the US BICES and NATO virtual networks within the Afghanistan theater and provide increased database information via Distributed Common Ground System - Army (DCGS-A). Provides an increase in intelligence disciplines (Imagery Intelligence (IMINT), Signal Intelligence (SIGINT), and potential Human Intelligence (HUMINT)) in support of US and Allied/Coalition forces that currently is very limited to the warfighter. Increased intelligence advanced analytics tools will be migrated from Joint Intelligence Operations Center (JIOC)-IT and DI2E developments and will significantly increase the timeliness of intelligence and bring US BICES/NATO Special Operations Forces Coordination Center (NSCC)/Intelligence Fusion Center (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 2013 Office of Secretary Of Defense		DATE: February 2012
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 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Multi-Level Security	SS/CPFF	Hill Air Force Base:Utah	1.700	0.900	Mar 2012	0.900	Apr 2013	-		0.900	4.200	7.700	8.000
US BICES Cloud Computing	SS/CPFF	Hill Air Force Base:Utah	0.300	0.300	Apr 2012	0.300	Mar 2013	-		0.300	1.200	2.100	3.000
US BICES Application Integration	SS/CPFF	Hill Air Force Base:Utah	0.792	0.244	Mar 2013	0.278	Mar 2013	-		0.278	7.000	8.314	10.000
		Subtotal	2.792	1.444		1.478		-		1.478	12.400	18.114	21.000

	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2.792	1.444		1.478		-		1.478	12.400	18.114	21.000

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

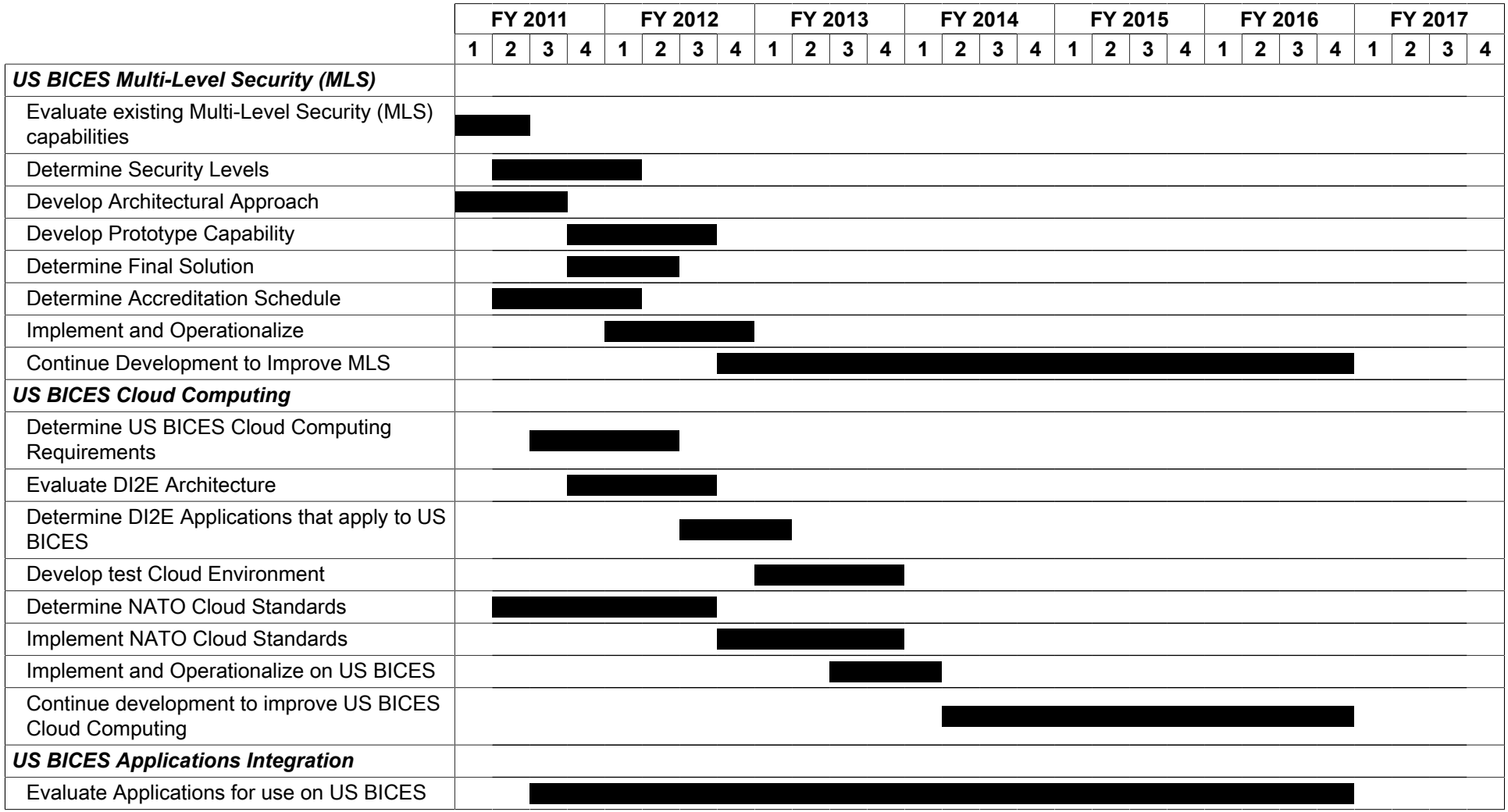

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0305600D8Z: *International Intelligence Technology and Architectures*	PROJECT 997: *International Intelligence Technology and Architectures*

	FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Integrate and test applications for utility on US BICES																												

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 (MLS)				
Evaluate existing Multi-Level Security (MLS) capabilities	1	2011	2	2011
Determine Security Levels	2	2011	1	2012
Develop Architectural Approach	1	2011	3	2011
Develop Prototype Capability	4	2011	3	2012
Determine Final Solution	4	2011	2	2012
Determine Accreditation Schedule	2	2011	1	2012
Implement and Operationalize	1	2012	4	2012
Continue Development to Improve MLS	4	2012	4	2016
US BICES Cloud Computing				
Determine US BICES Cloud Computing Requirements	3	2011	2	2012
Evaluate DI2E Architecture	4	2011	3	2012
Determine DI2E Applications that apply to US BICES	3	2012	1	2013
Develop test Cloud Environment	1	2013	4	2013
Determine NATO Cloud Standards	2	2011	3	2012
Implement NATO Cloud Standards	4	2012	4	2013
Implement and Operationalize on US BICES	3	2013	1	2014
Continue development to improve US BICES Cloud Computing	2	2014	4	2016
US BICES Applications Integration				
Evaluate Applications for use on US BICES	3	2011	4	2016
Integrate and test applications for utility on US BICES	3	2011	4	2016

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense										DATE: February 2012	
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 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	90.624	-	-	-	-	-	-	-	-	Continuing	Continuing
P018: *NATO AGS*	90.624	-	-	-	-	-	-	-	-	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 2013 Office of Secretary Of Defense	DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	90.624	-	-	-	-
Current President's Budget	90.624	-	-	-	-
Total Adjustments	-	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Program Adjustments	-	-	-	-	-
• Program Transfer to the Air Force	-	-	-	-	-

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 2013 Office of Secretary Of Defense			DATE: February 2012
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
P018: *NATO AGS*	90.624	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles											

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-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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 2011	FY 2012	FY 2013
Title: NATO AGS	90.624	-	-
FY 2011 Accomplishments: - Awarded prime contract for NATO AGS development and production. - Conducted an Integrated Baseline Review of the prime contract. - Implemented Global Hawk mission security updates. - Participated in technical and operational Working Groups including NATO AGS airworthiness certification. - Investigated approaches to ensure U.S. Global Hawk interoperability with NATO AGS. - Oversaw 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	90.624	-	-

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 2013 Office of Secretary Of Defense		DATE: February 2012
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 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NATO AGS PMOU/Prime Contract	SS/FFP	NORTHROP GRUMMAN CORPORATION:MELBOURNE, FL	96.300	-		-		-		-	0.000	96.300	
NATO AGS MISSION SECURITY	SS/CPAF	NORTHROP GRUMMAN CORPORATION:MELBOURNE, FL	60.966	-		-		-		-	0.000	60.966	
NATO AGS INTEROPERABILITY	SS/TBD	U.S. AIR FORCE:HANSCOM AFB, MA	2.100	-		-		-		-	0.000	2.100	
NATO AGS MARITIME MODES	SS/CPAF	NORTHROP GRUMMAN CORPORATION:MELBOURNE, FL	10.500	-		-		-		-	0.000	10.500	
		Subtotal	169.866	-		-		-		-	0.000	169.866	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NATO AGS MANAGEMENT SUPPORT	C/CPFF	U.S. AIR FORCE:DAYTON, OH	13.276	-		-		-		-	0.000	13.276	
		Subtotal	13.276	-		-		-		-	0.000	13.276	

	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	183.142	-		-		-		-	0.000	183.142	

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Office of Secretary Of Defense		DATE: February 2012
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*

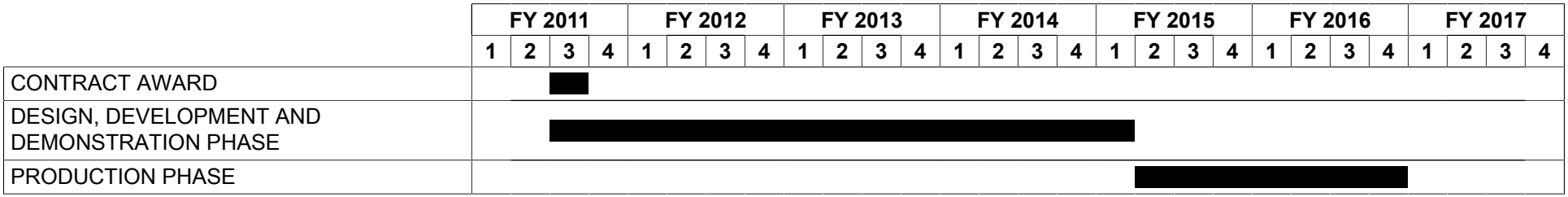

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Office of Secretary Of Defense		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 1001018D8Z: *NATO AGS*	**PROJECT** P018: *NATO AGS*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CONTRACT AWARD	3	2011	3	2011
DESIGN, DEVELOPMENT AND DEMONSTRATION PHASE	3	2011	1	2015
PRODUCTION PHASE	2	2015	4	2016

THIS PAGE INTENTIONALLY LEFT BLANK